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United States Department of the Interior
Bureau of Land Management

New Mexico State Office

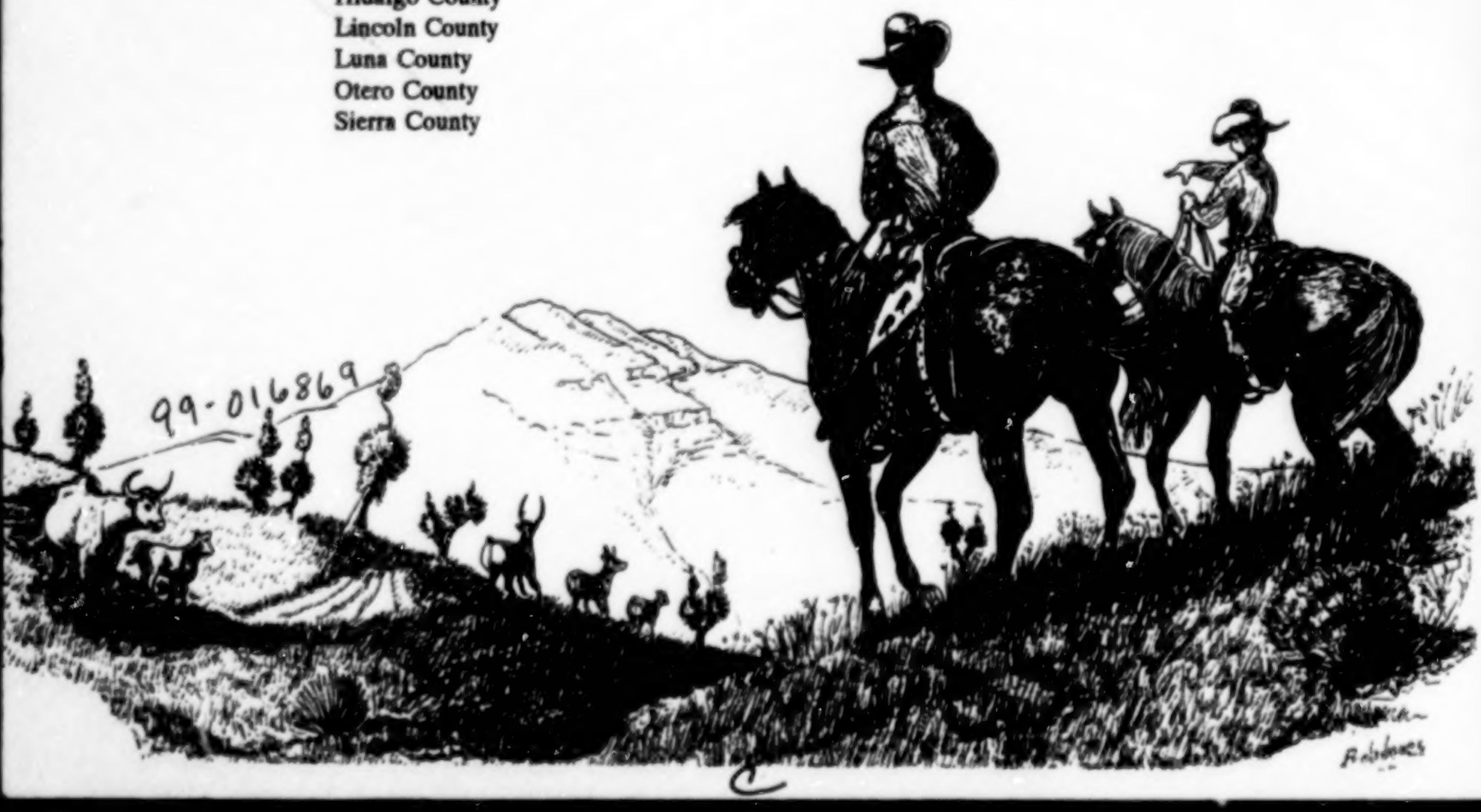
February 1999

Draft Statewide Resource Management Plan Amendment/
Environmental Impact Statement

New Mexico Standards for Public Land Health and Guidelines for Livestock Grazing Management

Joint Leads for project
New Mexico Bureau of Land Management
State of New Mexico

Cooperators for Project
Chaves County
Catron County
Eddy County
Grant County
Hidalgo County
Lincoln County
Luna County
Otero County
Sierra County



99-016869

Notice

This draft document should be retained to be used in conjunction with the final document. If changes resulting from public review and comment on the draft are relatively minor, the final document will include the modifications and corrections which should be made to the draft text as a result of public review and comment, as well as a record of public comments on this draft and responses to those comments.

BLM/NM/PL-99-001-1020

Bureau of Land Management
New Mexico

Office of the Lieutenant Governor
New Mexico

Dear Reader:

Enclosed for your review is the Draft Statewide Resource Management Plan Amendment/Environmental Impact Statement (EIS) for New Mexico Standards for Public Land Health and Guidelines for Livestock Grazing Management. A 90-day comment period begins February 12, 1999. Written comments postmarked no later than May 17, 1999 will be accepted. Comments on the alternatives and the adequacy of the impact analysis are most useful when they address one or more of the following:

- Errors in the analysis
- New information that would have a bearing on the analysis
- Misinformation that could affect the outcome of the analysis
- Request for clarification
- A substantive new alternative whose mix of allocations differ from any of the existing alternatives

Where possible, include in your comments reference to the pages and paragraphs on which you are commenting.

Please mail comments on this draft to:

John W. (J.W.) Whitney, BLM Project Leader
Bureau of Land Management (NM-931)
P.O. Box 27115
Santa Fe, NM 87502-0115

Written comments, including names and street addresses of respondents, will be available for public review at the above address during regular business hours (8:00 a.m. to 5:00 p.m.), Monday through Friday, except holidays, and may be published as part of the proposed plan and final EIS. Individual respondents may request confidentiality. If you wish to withhold your name and street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

Twelve public hearings have been scheduled. All hearings will have an afternoon and an evening session. The afternoon hearing will begin at 2:00 p.m. and continue until those signed up to speak have done so by 5:00 p.m. After a break for dinner the hearing will reconvene at 7:00 p.m. for the evening hearing and run until those signed up to speak have had an opportunity to do so. Both oral and written testimony will be accepted at the hearings. A 5-minute time limit will be placed on oral comments, which should be accompanied by a written synopsis of the presentation. Written and oral comments will be equally evaluated in full and considered in the preparation of the proposed RMPA/final EIS.

Hearings are scheduled for the following locations and dates:

March 08, 1999 - Crownpoint Institute of Technology, Crownpoint, NM
March 09, 1999 - Civic Center located at 200 West Arrington, Farmington, NM.
March 10, 1999 - Cuba High School, 50 County Road 13, Cuba, NM.
March 11, 1999 - Lucero Center in the Espanola Plaza, Espanola, NM.
March 15, 1999 - Holiday Inn at 1005 Paseo Del Pueblo Sur, Taos, NM.
March 16, 1999 - BLM Office, 2nd Floor Conference Room, 1474 Rodeo Rd. Santa Fe, NM.
March 17, 1999 - BLM Office, Conference Room, 1800 Marquess St. Las Cruces, NM.
March 18, 1999 - 110 South Diamond, Deming, NM.
March 22, 1999 - BLM Office, Conference Room, 435 Montano NE, Albuquerque, NM.
March 23, 1999 - Otero County Courthouse, Commission Chambers, Room 253, 1000 New York Ave., Alamogordo, NM.
March 24, 1999 - Carlsbad Public Library Annex at 101 S. Halagueno, Carlsbad, NM.
March 25, 1999 - NM Military Institute, Toles Learning Center, Maybee Room, 101 W College, Roswell, NM.

Please retain this draft as the proposed RMPA and final EIS may be printed in abbreviated form, in which case this draft will be used as a reference document.

Thank you for participating in this planning process. Your continued involvement will allow us to effectively manage public lands and resources throughout the state.

Walter D. Bradley
Lieutenant Governor

M. J Chávez
State Director

ABSTRACT

New Mexico Standards for Public Land Health and Guidelines for Livestock Grazing Management

Draft Statewide Resource Management Plan Amendment
and
Environmental Impact Statement

Draft (X) Final ( )

United States Department of the Interior, Bureau of Land Management (BLM)

1. Type of Action: Administrative (X) Legislative ( )

2. Abstract: This environmental impact statement (EIS) documents the effects of adopting statewide standards for public land health and guidelines for grazing management on BLM-administered lands in New Mexico. Any standards or guidelines adopted would be incorporated into eight existing resource management plans (RMPs) covering the public lands in New Mexico. This action is proposed in accordance with revised regulations for livestock grazing on BLM-administered lands (43 CFR 4100). The proposed standards and guidelines were developed in partnership with a statewide Resource Advisory Council (RAC), and with other public input.

   Four alternatives are considered in detail in this document. The first alternative (present management/no-action alternative) is the continuation of current management direction. This alternative provides a baseline for comparison with the other alternatives. The second alternative (proposed action) is to adopt the standards and guidelines developed by the RAC. This RAC alternative is also the BLM (agency) preferred alternative. The third alternative is to adopt standards and guidelines developed by the New Mexico/Arizona Coalition of Counties. The State has selected the alternative developed by the New Mexico/Arizona Coalition of Counties as their preferred alternative (see States position on page 1-5). The fourth alternative is to implement the fallback standards and guidelines defined in BLM's grazing regulations. With adoption of Alternatives 2, 3, and 4 there are changes that would be made to the existing land use plans. Any standards or guidelines adopted would incorporate changes to make the plans consistent with the guidelines adopted.

3. For further information contact:

   John W. (J.W.) Whitney, BLM Project Leader
   Bureau of Land Management, (NM-931)
   P.O. Box 27115
   Santa Fe, NM 87502-0115
   (505) 438-7438

4. Comments on the draft must be postmarked no later than May 17, 1999 and must be sent to the address listed above. To be most useful, comments on the draft should be as specific as possible and address the adequacy of the analysis, the merits of the alternatives discussed, or both.

5. Date Draft Filed with EPA: February 4, 1999

6. Recommended: Linda S. Rundell
   Deputy State Director

   Approved: M J Chavez
   State Director

   Approved: Walter Bradley
   Lt. Governor

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LIST OF ACRONYMS

ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
AHPA	Archeological and Historic Preservation Act of 1994
AIRFA	American Indian Religious Freedom Act of 1978
ALMRS	Automated Lands and Minerals Record System
AML	Appropriate Management Level
AMP	Allotment Management Plan
ARPA	Archeological Resources Protection Act of 1979
AUM	Animal Unit Month
BLM	Bureau of Land Management
BMP	Best Management Practices
°C	Degrees Celsius
C	Custodial
CDNST	Continental Divide National Scenic Trail
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CR	Conservation Recommendations
CRMP	Coordinated Resource Management Plan
DPC	Desired Plant Community
EA	Environmental Assessment
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FCRS	Farm Cost and Returns Survey
FLPMA	Federal Land Policy and Management Act
FS	Forest Service
FTE	Full Time Equivalent
GABS	Grazing Authorization and Billing System
GIS	Geographic Information System
HMA	Herd Management Area
HMAP	Herd Management Area Plan
I	Improve
IO	Input/Output Model
LGMP	Livestock Grazing Management Practice
LUP	Land Use Plan
M	Maintain
MFP	Management Framework Plan
MLRA	Major Land Resource Area
mm	Millimeters
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act of 1966
NMDFRS	New Mexico Division of Forestry and Resource Survey
NMDGF	New Mexico Department of Game and Fish
NMED	New Mexico Environment Department
NMSU	New Mexico State University
NMWQCC	New Mexico Water Quality Control Commission
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System

NPS	Nonpoint Source Pollution
NRCS	Natural Resource Conservation Service (formerly Soil Conservation Service)
OHV	Off Highway Vehicle
PAH	Polycyclic Aromatic Hydrocarbon
PILT	Payment-In-Lieu-of-Taxes
PMOA	Programmatic Memorandum of Agreement
PNC	Potential Natural Community
PRIA	Public Rangeland Improvement Act
RAC	Resource Advisory Council
RMP	Resource Management Plan
ROD	Record of Decision
ROW	Right-of-Way
RPM	Reasonable and Prudent Measures
R&PP	Recreation and Public Purposes
SHPO	State Historic Preservation Officer
SMA	Special Management Area
TCP	Traditional Historic Properties
T&E	Threatened and Endangered
TGA	Taylor Grazing Act
TUP	Temporary Use Permits
VOP	Value of Production
WA	Wilderness Area
WHA	Wildlife Habitat Area
WSA	Wilderness Study Area
USDI	United States Department of the Interior
USFWS	U.S. Fish and Wildlife Service

CONVERSIONS

Length

mm/25.4 = inches
cm/2.54 = inches
meters x 3.28 = feet

Area

hectares x 2.47 = acres
square kilometers x .386 = sq. miles
1 section is approximately 640 acres and/or 1 sq. mile

Temperature

degrees Celsius x 1.8 +32 = degrees Fahrenheit

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SUMMARY

SUMMARY

This statewide resource management plan amendment statement environmental impact documents the effects of adopting standards for public land health and guidelines for livestock grazing management on Bureau of Land Management (BLM)-administered lands in New Mexico. The standards and guidelines would be incorporated into eight BLM resource management plans that cover approximately 13.5 million acres. In addition, for each alternative there are existing land use decisions that are not in conformance with the standards that would be changed to bring them into conformance.

The action is proposed in accordance with revised regulations for livestock grazing on BLM-administered lands. Standards describe conditions needed for healthy sustainable public rangelands and relate to all uses of the public lands. They provide the measure of resource quality and functioning condition upon which the public land health will be assessed. Each standard will be most effective if it can be tailored for site-specific activities that occur in different areas. However, by incorporating the standards into the existing resource management plans, all activities will be subject to the standards. In order to measure the effectiveness of each standard in specific areas, a set of measurable indicators and associated criteria were identified for each site-specific situation. These indicators and criteria were used to evaluate the standards in relation to activities that occur in different areas. The analysis identified that most activities will be minimally affected by the standards. The most affected activity will be livestock grazing.

Guidelines for livestock grazing are management tools, methods, strategies, and techniques designed to maintain or achieve standards. Guidelines for other activities are not a part of the proposal but may be developed at a later date.

Of the 2,193 grazing allotments, it is projected that between 287 to 480 allotments (a relatively small percentage) would not meet the standards, depending on the alternative. Of the allotments not meeting the standards, the majority would have to adjust the management of their livestock to some extent. The most common management adjustment would be a deferment from grazing period, or a change in season of use. In a few cases, a reduction in livestock numbers would be needed; however, large scale reductions in numbers of livestock are not expected for any of the alternatives because adjustments have been made over time through the BLM Rangeland Monitoring Program. In the short term, some allotments would increase livestock numbers while others may be adjusted downward. Statewide, the numbers are expected to remain at approximately the past 10-year average for all alternatives. In the long term, livestock use is expected to increase as the rangelands improve in health and the forage production increases.

Four alternatives were analyzed in detail. The No-Action (Present Management) Alternative would continue land management and livestock grazing practices that BLM was using prior to the passage of the current grazing regulations approved on February 22, 1995. These practices cannot be continued under the current regulations; however, an analysis is provided to serve as a base for analysis of the other three alternatives.

The Resource Advisory Council Alternative (Proposed Action) was developed by the New Mexico Statewide Resource Advisory Council (RAC). The RAC members were from various parts of the State and represented various uses and interests in the public lands. During the development process, they received a great deal of input from the public. While the RAC Alternative blends human dimension, physical biological goals and values, it also provides a separate standard for human dimension goals and values. This alternative provides the most positive economic return to the livestock permittees for the long term.

The County Alternative is proposed by the New Mexico members of the Coalition of Arizona/New Mexico Counties. This alternative provides for a balance in each standard between the human dimension and physical and biological values and goals. The alternative focuses on insuring that historic grazing practices are maintained, and provides the most positive economic return to the livestock permittees in the short term.

The Fallback Alternative was developed as part of the current grazing regulations published in 1995. The Fallback Standards and Guidelines are now in place on an interim basis pending completion of the analysis and Record of Decision. This alternative does not include human dimension standards. Rather, it focuses on the physical and biological goals and values and is the most environmentally proactive. As a result, the Fallback Alternative provides the least economic return to the permittees in the short term and long term.

//

CHAPTER 1

CHAPTER 1
PURPOSE AND NEED

INTRODUCTION

This Statewide Resource Management Plan Amendment (RMPA)/Environmental Impact Statement (EIS) analyzes the effects of adopting standards for public land health and guidelines for livestock grazing management in New Mexico. At the conclusion of this process, a set of standards and guidelines will be approved and incorporated by plan amendment into the eight existing Resource Management Plans (RMPs) that cover approximately 13.5 million acres of Bureau of Land Management (BLM)-administered land in New Mexico. The acreage of public lands by RMP are:

RMP Name	Record of Decision Date	Public Land Acreage
Rio Puerco	1/16/86	896,000
White Sands*	9/05/86	2,269,000
Farmington	6/10/88	1,541,000
Taos	7/26/88	564,000
Carlsbad	9/29/88	2,197,000
Socorro	1/29/89	1,518,000
Mimbres	4/30/93	3,054,000
Roswell	10/10/97	1,490,000
Total		**13,529,000**

*(Caballo portion of the Las Cruces Field Office).
Source: Existing BLM RMP's and BLM Files

All of the BLM-administered lands in New Mexico are managed under completed RMPs.

Public land health is defined as the degree to which the integrity of the soil and the ecological processes of public lands are sustained. Public land health exists when ecological processes are functioning properly to maintain the structure, organization, and activity of the system over time. Healthy public lands are sustainable, thus ensuring their use and enjoyment for future generations. Healthy public lands also contribute to the social and economic well being and health of many New Mexico communities. Thus healthy communities are in a better position to contribute to healthy public lands by conserving and protecting the resources.

Standards describe conditions needed for healthy sustainable public rangelands and relate to all uses of the public lands. They provide the measures of resource quality, condition, or function upon which the public land health will be assessed.

It is not possible to determine if every acre meets every standard of for every acre to acheive every standard. Therefore, each standard will be most effective if it can be tailored for site-specific types of land. The ecological site is the most logical and practical unit upon which to base an interpretation of rangeland health. An ecological site is a distinctive kind of land that differs from other kinds of land in its ability to produce types and amounts of vegetation in response to management.

To determine how each standard should be tailored for site-specific situations, a set of measureable indicators and associated criteria will be developed for each ecological site. These indicators and criteria will be used to evaluate the standards and determine rangeland health.

Guidelines are either activity- or use-specific. Guidelines for livestock grazing are management tools, methods, strategies, and techniques designed to maintain or achieve standards. They will apply where the public lands do not meet the standards and existing livestock grazing practices are believed to be a contributing factor. Guidelines for activities other than livestock grazing are not mandated through regulation; however, they may be developed should the need arise.

BLM's authority to manage public rangelands is established by the Federal Land Policy and Management Act of 1976 (FLPMA), Taylor Grazing Act of 1934 and Public Rangeland Improvement Act of 1978 (PRIA). Through this authority, BLM is responsible for managing resources on public lands in a manner that maintains or improves them on the basis of multiple use and sustained yield. In 1994 BLM, through its Rangeland Reform '94 initiative, began developing new regulations for grazing administration. Through this process, which had extensive public involvement, BLM launched its "Rangeland Health" initiative and finalized the new regulations for grazing administration in Title 43 of the Code of Regulations (43 CFR Part 4100; 60 FR 9894) which were adopted by the Department of the Interior and became effective August 21, 1995.

The process for development, approval, maintenance, and amendment of RMPs and their associated EISs was initiated under authority of Section 202(f) of FLPMA and Section 202c of the National Environmental Policy Act of 1969 (NEPA) 1969. The process is guided by BLM planning regulations (43 CFR 1600-1610), and Council on Environmental Quality Regulations (40 CFR 1500-1508). This proposed RMPA amendment is in accordance with federal regulations on grazing (43 CFR 4100), issued on February 22, 1995. The regulations direct implementation of standards and guidelines subject to NEPA and the BLM planning regulations.

Subpart 4180 of the new regulations (see Appendix A), provided that BLM State Directors, in consultation with Resource Advisory Councils (RACs) where they exist, develop state or regional standards and guidelines for approval by the Secretary of the Interior by August 12, 1997. If this did not occur, the fallback standards and guidelines described in Subpart 4180.2 of the regulations would apply. BLM began implementation of the fallback standards and guidelines starting March 1, 1998 where it had been determined that standards were not being met and livestock grazing was a contributing factor. Generally this was where riparian areas were not in properly functioning condition.

The BLM in New Mexico is committed to the development and implementation of locally adapted standards and guidelines. The purpose of developing standards at the state level is to provide an additional opportunity for residents of New Mexico to debate and participate in determining the standards for which the BLM-administered public lands will be managed. Additionally, New Mexicans are provided the opportunity to further participate in identification of livestock grazing guidelines that will be used to assist in meeting the standards on BLM-administered public land in New Mexico.

The proposed standards and guidelines, developed through the New Mexico RAC with considerable public input, are analyzed as the proposed action in this document. The New Mexico RAC is chaired by a Governor's representative and is made up of 15 members of the public and elected officials representing various uses and interests on BLM-administered lands.

Following the regulations (43 CFR 4180), the New Mexico BLM initiated a series of five RAC meetings from October 1995 through May 1996, for the purpose of developing the standards and guidelines for New Mexico. Draft standards and guidelines were developed and then taken to the public in a series of scoping meetings in June 1996. Both written and oral comments received during the scoping process were given to the RAC, which convened for three additional meetings in August, September, and October 1996 to develop a proposed action to be analyzed in the NEPA process. At each RAC meeting there was time for the public to address the council with their concerns, followed by questions from the RAC members on those concerns.

The purpose of this RMPSA/EIS is to analyze what standards and guidelines should be implemented in New Mexico and the social, economic, and environmental effects of doing so. This EIS process is one step to accomplish these goals in collaboration with the New Mexico RAC and citizens of the state.

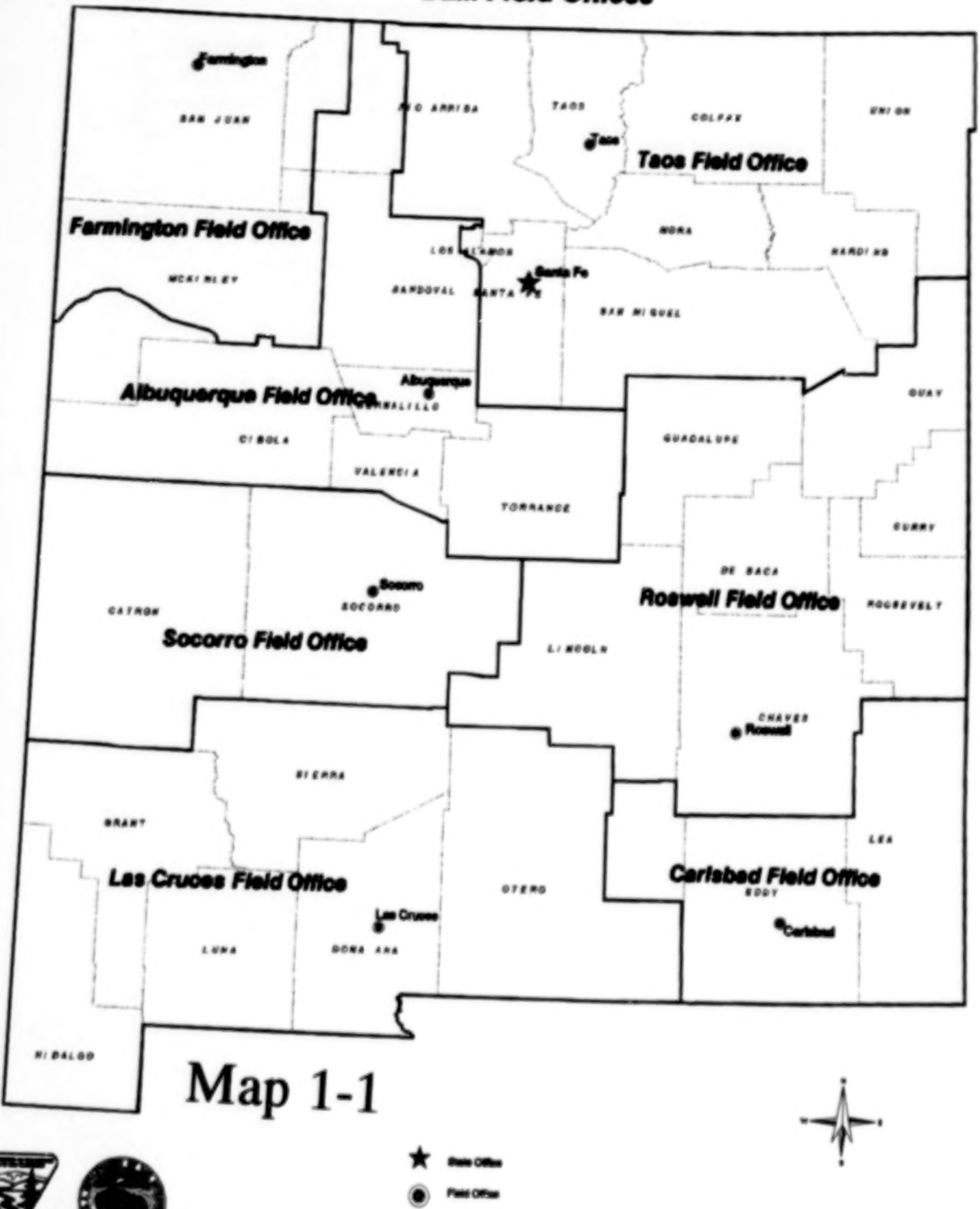
LOCATION AND DESCRIPTION OF THE PLANNING AREA

The planning area encompasses all surface acreage administered by BLM Field Offices in the state of New Mexico. The boundaries are shown on Map 1-1.

PLANNING AMENDMENT PROCESS

The NEPA/RMPA process consists of the same nine steps used to prepare the RMPs. This process requires the use of an interdisciplinary team of resource specialists for the completion of each step. The steps are described in the planning regulations. The publication of this document is part of Step 7, selection of a preferred alternative. The NEPA/RMPA process began with a Notice of Intent published in the *Federal Register* on January 31, 1996. The Notice of Intent opened the public comment period on the proposal to prepare an environmental document and modify all

NEW MEXICO
BLM Field Offices



Map 1-1

Produced by the Bureau of Land Management
New Mexico State Office Geographic Sciences Team

New Mexico RMPs. A second *Federal Register* notice was published on May 23, 1996, announcing a series of 16 scoping meetings and that the comment period which began with the January Notice Of Intent would close June 28, 1996. The comments received at the scoping meetings and through written submissions showed a high level of controversy over the standards and guidelines. Based on this information, it was decided to prepare this EIS to assess, display, and compare the social, economic, and environmental consequences of implementing standards and guidelines according to the requirements of NEPA.

This detailed analysis covers the following four alternatives:

- No-Action (Present Management) Alternative
- RAC Alternative (Proposed Action)
- County Alternative
- Fallback Alternative

Present management direction from the RMPs (No-Action Alternative) was analyzed to provide a baseline from which impacts were measured.

An RMPA/EIS team was formed that included representatives from each New Mexico BLM field office and a data contact person from each field office (see list of preparers in Chapter 5). The team met in October 1996 to start the data gathering process and agree on procedures that would ensure a consistent interdisciplinary analysis. In November 1996, the interdisciplinary team was expanded to include team members from the state of New Mexico having knowledge in specific areas (also listed as preparers in Chapter 5).

This draft RMPA/EIS will be published and released for a 90-day comment period, announced by a Notice of Availability in the *Federal Register*, and news releases in major newspapers throughout the state. The BLM, in consultation with the New Mexico RAC, will consider comments received on the draft RMPA/EIS in the preparation of the proposed RMPA/Final EIS. The proposed RMPA/ Final EIS will be published and sent to those commenting on the draft. Again, the proposed RMPA/final EIS will be announced by a Notice Of Availability in the *Federal Register* and through news releases in major newspapers throughout the state. At this time BLM will submit to the Governor the proposed RMPA/Final EIS and identify any known inconsistences with state and local plans, policies, and programs. The Governor will then have 60 days in which to identify inconsistencies and provide recommendations in writing to the State Director. People who have participated in the process and who are adversely affected may protest to the BLM Director. Following resolution of any protest, the standards and guidelines will be forwarded to the Secretary of the Interior for approval.

Following the standards and guidelines approval for use in New Mexico, each BLM field office will begin implementation based on the alternative selected. A logical system of prioritization will be adopted due to BLM funding and staffing limitations.

The first step will be to interpret site indicators and develop management targets for the standards that are specific to ecological site. Consistent with recommendations from academic and other rangeland interests, the BLM plans to develop site indicators and target in consultation with an interagency team of rangeland specialists.

Once the management targets are established, the public lands can be inventoried to determine areas that meet or do not meet the standards. Consistent with the recommendation by the RAC, a statewide approach to application of the ecological site targets has not been developed by BLM. Each field office will develop priorities and procedures in consultation with the academic institutions, Soil and Water Conservation Districts, State Land Office, New Mexico Department of Agriculture, Natural Resource Conservation Service, Forest Service, county representatives, other landowners, grazing permittee/lessee and other rangeland interests.

When it is determined that an area does not meet a standard, the BLM will project why the area does not meet the standard. When current livestock grazing practices are projected to be one of the reasons the livestock grazing guidelines will be applied to the area. When applying the grazing guidelines, the BLM manager will consult with the grazing permittee/lessee and other interested public to develop corrective actions. Specific application of the guidelines would occur at the local level in careful and considered consultation; cooperation; and coordination with lessees, permittees, and landowners involved in accordance with Section 8 of the PRIA. The BLM regulations, 43 CFR Section 4180.2 (c), state that: "the authorized officer shall take appropriate action as soon

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as practicable but not later than the start of the next grazing year."

When other current activities appear to be the reason the area is not meeting the standard, adjustments in management will be made to the activity as rapidly as practical.

USE OF THIS DOCUMENT

This document is not a decision document. The document will not be used for day-to-day management of the public lands. An EIS is an analytical tool to assist a decision maker in reaching a decision. The decision to be made will be displayed in the Record of Decision that is issued after the final EIS is published. In this particular case the Record of Decision will cover the statewide standards, livestock grazing guidelines, and RMP amendments.

ISSUES

The following major environmental issues and concerns are addressed in this document:

- natural resources effects
- multiple use effects
- commodity production effects
- economic and social effects
- statutory rights effects

PLANNING CRITERIA

The planning criteria for this RMPA are the same as those for the RMPs for each of the field offices. Thus planning criteria will be used when each planning document is to be amended. A copy of the criteria for each of the existing RMPs is available by request from the BLM New Mexico State Office.

RELATIONSHIP TO EXISTING PLANS

Existing RMPs were reviewed to determine if the standards and guidelines being developed through the RAC or by the county, and the fallback standards and guidelines conformed to each RMP. The results of the conformance review was documented for each RMP (see Appendix B-1). While most decisions and objectives conformed, a few needed to be modified or replaced. Those that conformed could be clarified through plan maintenance, (see Appendix B-2) while only those to be modified or replaced would have to go through the plan amendment process. All proposed standards and guidelines, however, needed to be taken through the NEPA process. Because of this requirement, and to lessen the confusion and simplify the proposal, it was decided to consider the entire action as a statewide plan amendment. The statewide amendment, once approved, will amend as necessary the eight existing RMPs.

PREFERRED ALTERNATIVE SELECTION

Following a review of the analysis of the alternatives BLM has selected the RAC Alternative as the Agencies Preferred Alternative.

The State of New Mexico selected the County Alternative as their preferred alternative. The Lieutenant Governor provided the following three paragraph statement for inclusion in the document:

> On behalf of the State of New Mexico I want to thank all the participants who were involved in producing this document. I believe it is the first of its kind that involved state, county and federal participants as equal partners under NEPA. This final product demonstrates that collectively we can provide an equitable response to environmental issues.
>
> The RAC Alternative fully addresses the technical aspects of the environment and considers the human dimension as one of those standards. The County Alternative recognizes the human dimension to be the major integral component before implementing the standards. Without the human dimension there is no implementation. The County Alternative gives full consideration toward minimizing any negative impacts in social, economic and cultural areas.
>
> In addition, the County Alternative more clearly focuses and recognized states' rights and jurisdictions of its natural resources. Therefore, the State of New Mexico requests that strong consideration be given to the County Alternative as the preferred alternative.

CHAPTER

2

CHAPTER 2
PROPOSED ACTION AND ALTERNATIVES

INTRODUCTION

Four alternatives are considered and analyzed in this document:

- No Action Alternative (Present Management)
- RAC Alternative (Proposed Action)
- County Alternative
- Fallback Alternative

The proposed action or alternatives, if selected and approved could be implemented and, would amend all the RMPs in New Mexico by adopting the standards and guidelines approved through the NEPA process. The livestock grazing regulations require that land health standards and livestock grazing guidelines be used for future management; therefore, continuing with present management is not an option. Additionally, during the preparation of this document the August 12, 1997 deadline relating to the fallback standards and guidelines elapsed. Therefore, fallback standards are now in place. However, management that was occurring when this document was initiated is reflected as the No Action Alternative. The No-Action Alternative serves as a bench mark on which to compare the alternatives that have been proposed. Appendix B-1 presents a summary of the present decisions in the RMPs that would be affected by adopting the Proposed Action, the County Alternative, or the Fallback Alternative. (There are many other decisions in the RMPs that are not affected; these decisions are not shown.)

The following is a detailed description of each of the alternatives.

NO ACTION ALTERNATIVE (PRESENT MANAGEMENT)

Standards For Public Land Health

Although BLM does not have an established standard identified, the ecological site and late seral condition are the standards generally utilized as the goal for management. The ecological site serves as the mapping unit and database for rangeland information. The Natural Resource Conservation Service (NRCS--formerly the Soil Conservation Service) developed a National Range Handbook as a guide to using the range site as the mapping and descriptive unit for rangelands. In 1982, the BLM also adopted the range site inventory procedure. In 1994, the BLM replaced the range site with the ecological site, to be consistent with the updated procedures of the NRCS. Under this alternative for rangeland management in New Mexico, the ecological site would continue to be the base unit for rangeland management, and late seral condition would be used as a management target.

Guidelines for Livestock Grazing

The BLM is responsible for resolving rangeland issues. When there are livestock grazing issues that need to be resolved, BLM takes appropriate and timely action. To make necessary adjustments it may implement a livestock grazing plan or adjust the terms and conditions of the permit or lease.

Livestock grazing plans are developed based on priorities set by following RMP decisions. These livestock grazing plans developed either by the BLM or NRCS (NRCS takes the lead when less that 50 percent of the allotment is public land). These plans are developed in consultation, coordination, and cooperation as directed by PRIA. Regardless of the agency that develops these livestock grazing plans, they must accomplish the following:

- include the terms and conditions of the permit
- describe the desired resource condition
- prescribe the livestock grazing practices that will be used to meet the desired resource condition
- specify the flexibility of the plan, and provide for monitoring

The lead agency (BLM or NRCS) then completes a NEPA environmental assessment prior to approval of the livestock grazing plan.

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As mentioned previously, the plan must provide for monitoring. BLM relies on basic rangeland studies to monitor grazing allotments that include recording precipitation, trend (plot photos and periodic measurements for plant composition and ground cover), actual use by livestock, and forage utilization. Depending on the resource objectives, other appropriate methods of monitoring are used.

After the allotment monitoring results are collected, BLM reviews and evaluates the data and files them in the study file for that allotment. Periodically, or upon request, the livestock grazing plan and results of monitoring may be evaluated to determine if the plan is consistent with management objectives of both the individual rancher and BLM for rangeland health or sustainability.

Types of adjustments that might be made on the allotment after evaluation could include time of year and duration of livestock use, number or kind of livestock, or other existing livestock management practices. Any adjustments are made in consultation with the permittee and other interested public.

Additional monitoring may be conducted by BLM as conditions warrant and resources are available. Allotments determined as high priority are monitored even if the grazing plan is not complete. Allotments not determined as high priority only receive periodic field observations.

RAC (PROPOSED ACTION) ALTERNATIVE

The RAC Alternative was developed locally by the New Mexico Resource Advisory Council (RAC), with public input from a variety of interested publics.

Standards for Public Land Health

Upland Sites Standard

Upland ecological sites are in a productive and upland ecological sites are in a productive and sustainable condition within the capability of the site. Upland soils are stabilized and exhibit infiltration and permeability rates that are appropriate for the soil type, climate, and landform. The kind, amount, and/or pattern of vegetation provides protection on a given site to minimize erosion and assist in meeting water quality standards.

Indicators for this standard may include but are not limited to:

- Consistent with the capability of the ecological site, soils are stabilized by appropriate amounts of standing live vegetation, protective litter and/or rock cover.
- Erosion is indicated by flow patterns characteristics of surface litter soil movement, gullies and rills, and plant pedestalling
- Satisfactory plant protection is indicated by the amount and distribution of desired species necessary to prevent accelerated erosion.

Biotic Communities, Including Native, Threatened, Endangered, and Special Status Species Standard

Ecological processes support productive and diverse biotic communities, including special status, threatened, and endangered species appropriate to site and species.

Desired plant community goals are met to maintain and conserve productive and diverse populations of plants and animals which sustain ecological functions and processes.

Indicators for this standard may include but are not limited to the following:

- Commensurate with the capability of the ecological site, plant and animal populations are:

  Productive

  Resilient

  Diverse

  Sustainable.
- Landscapes are composed of communities in a variety of successional stages and patterns.

- Diversity and composition of communities are indicated by the kinds and amount of species.
- Endangered and special status species are secure and recovering. With the goal of delisting and ensuring that additional species need not be listed within New Mexico.

Riparian Sites Standard

Riparian areas are in a productive and sustainable condition, within the capability of that site.

Meaning That:

Adequate vegetation of diverse age and composition is present that will withstand high streamflow, capture sediment, provide for groundwater recharge, provide habitat and assist in meeting water quality standards.

As Indicated By:

Indicators for this standard may include but are not limited to:

- Stream channel stability as determined by:
    - Gradient
    - Width/depth ratio
    - Channel roughness
    - Sinuosity.
- Streambank stability as determined by:
    - Shearing and sloughing
    - Vegetative cover on the bank.
- Appropriate riparian vegetation includes a mix of communities comprised of species with a range of:
    - Age
    - Density
    - Growth form.

Human Dimension Standard

Economic, social and cultural (Human Dimension) elements are integral components of public land management.

Meaning That:

When engaged in NEPA and RMP planning and decision-making for public land management, the New Mexico BLM in consultation with state, tribal, local governments, individuals, and other concerned public and private organizations will use available means and measures to create and maintain conditions under which people and nature co-exist in productive harmony. Consideration of the economic, historical, cultural, and social welfare of the permittees, lessees, other affected interests, and local communities, to maintain productive and sustainable ecological sites for present and future generations of Americans.

As Indicated By:

Indicators for this standard may include but are not limited to:

Efforts at conflict resolution, negotiation and communication. Formal and informal agreements and partnerships with private landowners and others.

Consider the following factors:

Economic (income, tax base, related services, and risk assessment);

Social (community stability, aesthetics, values and population change);

Cultural (customs or traditions, values and sense of community).

Guidelines for Livestock Grazing

Guidelines are any reasonable and practical management options which, when applied, move rangelands toward statewide standards. Guidelines reflect potential for the watershed. Guidelines also balance resource goals contained in RMPs with social, cultural/historic, and economic opportunities to sustain viable local communities, and to consider recreation and aesthetic values. Guidelines are based on science, past and present management experience, and public input.

These guidelines are for public lands livestock grazing. They do not apply where public lands are deemed unsuitable or not used for livestock grazing. These guidelines will be used to develop grazing management practices that will be developed and implemented at the watershed, allotment, or pasture level.

Specific application of these guidelines (Livestock Grazing Management Practices--LGMPs) will occur at the local level in careful and considered consultation, cooperation and coordination with lessees, permittees, and land owners involved.

New Mexico's intermingled land ownership pattern creates a patchwork of resource management objectives. The resource should be viewed as a whole with full appreciation for this integrated relationship and recognition of the rights of private landowners to enjoy the benefits of that ownership.

Guidelines should encourage innovation and experimentation in the development of alternative livestock grazing management practices to improve rangeland health.

1. LGMPs should promote plant health, and soil stability, water quality, and habitat for wildlife and threatened and endangered species, by providing the following basic requirements of rangeland ecological sites:

    (a) Allow for plant recovery and growth time;

    (b) Allows residual vegetation on both upland and riparian sites to protect the soil from wind and water erosion, support infiltration, and prevent excessive evaporation;

    (c) LGMPs include the use of livestock to:

        (1) Integrate organic matter into the soil,
        (2) Distribute seeds and establish seedings,
        (3) Prune vegetation to stimulate growth,
        (4) Enhance infiltration.

    (d) Season, duration, frequency and intensity of use should be flexible and consider climate, topography and kind, class and health/condition of livestock.

2. Future livestock management facilities should be located away from natural riparian-wetland areas wherever they conflict with achieving or maintaining the desired future condition.

3. Give priority to rangeland improvements and land treatments that offer the best opportunity for achieving standards.

4. Where LGMPs alone are not likely to achieve the desired plant community (including control of noxious weeds), land management practices including, but not limited to, prescribed fire, biological, mechanical, and chemical land management treatments should be utilized.

5. Native plant species are recommended for rehabilitating disturbed rangeland. Seeding of non-native species will be considered based on local goals, native seed availability, and cost.

6. The public land grazing resources of New Mexico are managed on the basis of multiple use and sustained yield. Livestock grazing produces food and fiber, and contributes to a diverse, balanced, competitive, and resilient economy. Management should provide opportunities for a variety of individual choice and risk taking ventures in a responsible manner. This guideline may include, but is not limited to, consideration of impacts to employment, earnings, per capita income, investment income, federal government payments to the state, tribal and local governments, and tax base.

COUNTY ALTERNATIVE

The standards and guidelines in this alternative were developed through the efforts of the New Mexico members of the Coalition of Arizona/New Mexico

Counties. This alternative is printed as it was given to BLM by the Coalition. BLM agreed to include the alternative for analysis purposes; however, BLM does not necessarily concur with parts or all of the alternative as written. The Coalition stated that the alternative must be evaluated as a whole, not just as parts, to fully understand the alternative.

The definitions listed below were provided by the New Mexico members of the Coalition of Arizona/New Mexico Counties for use with the County Alternative.

Definitions

Desired Plant Community-the designed vegetative mosaic to meet RMP goals as developed through a statutory process that balances resource conservation with individual, social, cultural/historic and economic opportunities to promote, sustain and enhance local communities.

Allotment Grazing Right Owner-Owner of the preference on BLM lands.

Ecological Site-Classification of an area that would be expected to produce a characteristic potential biotic community that has a predictable plant composition and animal production.

Guideline-Guidelines for grazing management are methods and practices to ensure that standards can be met or that progress can be made toward that end.

Production Goals-The level of goods and services, both commodity and non-commodity, expected to be achieved from the management of a given area of land. These are designed to meet statutory requirements and public values as developed at the local level.

Optimum Infiltration-The capture of precipitation based on soil type and geologic conditions measured by the delivery of water to ground and surface sources.

Site Potential-The ability of a particular site to produce various vegetation compositions and production levels as limited by edaphic, climatic, geologic, genetic and topographic factors.

Standard-An acknowledged measure of comparison regarding a resource upon which a judgment or decision is based. Measurements include adequate and reproducible sampling methods, sampling size and sampling frequency and duration to obtain discrete values for each ecological site within a management area.

Sustainable-Capable of maintaining RMP goals in perpetuity. Sustainable can be equated with proper ecological functioning.

Standard For Public Land Health

Rangeland Health: A satisfactory condition or an upward trend in range condition in an ecological site, with desired plant community and site potential as its basis, measured against established RMP goals, as determined by statutory requirements balanced with the conservation of individual, social and cultural/historic economic opportunities to promote, sustain and enhance local communities.

Grazing Guideline

For the purposes of maintaining or promoting adequate amounts of vegetative cover ground cover, including standing plant material and litter, to support infiltration, maintain soil moisture storage, and stabilize soils; promoting the opportunity for seedling establishment of appropriate plant species when climatic conditions and space allow; and incorporating the use of non-native plant species only in those situations in which native species are not available in sufficient quantities or are incapable of maintaining or achieving properly functioning conditions and biological health:

a. Grazing practices should provide for a satisfactory or long-term increasing vegetation and litter cover that will assure erosion and sedimentation levels are acceptable for specific ecological sites.

b. Grazing practices should provide for a stable or upward long-term vegetal trend as evidenced by photo records, and frequency, cover and composition data.

c. Actual use studies, actual use numbers and utilization maps continue to be developed and coordinated with vegetal trend data. Rangeland studies will be multi-year to assure validity and account for climatic variations. Until RMP production goals are specifically established and desired plant communities designated, grazing practices should provide for a satisfactory or long term increasing vegetative and

litter cover to meet statutory requirements, established uses, and protection of the soils to not exceed acceptable soil loss tolerances, thereby assuring a full range of options for future land management decisions.
d. Allotment management plans should be mutually developed by the BLM, other agencies with jurisdiction by law and allotment grazing right owner to encourage ungulate distribution to attain desired forage use levels.
e. Management of livestock within special management areas (Wilderness, Wilderness Study Areas, Areas of Critical Environmental Concern and Resource Conservation Areas) should be cooperatively developed with the allotment grazing right owner and/or lessee.

Fundamental Guideline: Management Guidelines are any reasonable and practical management options that move rangelands toward statewide standards. Guidelines are based on long term scientific data and trends, past and present management experience, and public input. Guidelines are developed and implemented at the local or allotment level and should be reflected in the management plan.

State Primacy Considerations

1. The jurisdiction over soil and water resource conditions belong to the New Mexico Soil and Water Conservation Districts (SWCDs). Therefore, the BLM FO Managers should be working closely with the SWCDs in the development of District Area Conservation Plans that focus on site specific soil conditions.

Statutory or Regulatory Reasoning

1. Under 43 CFR §1610.4-4(e) and (g) the agency is required to consider the ability of the resource area to respond to local needs when formulating reasonable alternatives.
2. The Taylor Grazing Act, Granger-Thye Act, Multiple Use Sustained Yield Act, Federal Land Policy Management Act and the Public Rangelands Improvement Act all point to sustained livestock production as the intended primary use of the BLM lands.
These acts also create the requirements to consult, coordinate and cooperate with the State, Tribal, Local governments and the permittee and/or lessee in the development of management actions.
3. The National Environmental Policy Act (NEPA) and Council on Environmental Quality Regulations require notification of and opportunity for State and Local Governments to be parties to Federal Agency decision making. The NEPA regulations also require that cultural, economic and social impacts be investigated and disclosed to the decision maker(s) and the public.
The intent of the NEPA at §101(b)(4) calls for "providing a variety of individual choices."
4. The proposed standard and guidelines exceed the fallback standards and guidelines 43 CFR Ch.11 §4180.2(f); address the minimum standards requirements of 43 CFR Ch.11 §4180.2(d); and address the minimum guidelines requirements of 43 CFR Ch.11 §4180.2(e) and ensure that the conditions set forth in 43 CFR Ch.11 §4180.1(a) through (d) are achieved.
5. As its name suggests, the Taylor Grazing Act established the BLM lands for grazing.
6. Site-specific actions shall be coordinated with the state agencies or any sub-division thereof, to control or contain the targeted undesirable plant species as defined by state or county laws.

Comments

1. In keeping with the definition of standard, this allows for the specifics to be crafted at the local level as they relate to all uses.
2. If the standard is not tied down to the specific goals in the RMP, then all concerned, from the BLM, to the public, to the allotment grazing right owner will not have tangible targets to achieve through management.

Standard

Biotic Community: A satisfactory level of flora and fauna diversity exist for each ecological site with desired plant community and sustainable site potential as its basis, measured against established RMP production goals as determined by statutory requirements balanced with the conservation of individual, social and cultural/historic economic opportunities to promote, sustain and enhance local communities.

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Grazing Guidelines

For the purposes of maintaining or promoting the appropriate kinds and amounts of soil organisms, plants and animals to support the hydrologic cycle, nutrient cycle, and energy flow; restoring, maintaining or enhancing habitats to assist in the recovery of Federal threatened and endangered species; restoring, maintaining or enhancing habitats of Federal Proposed, Category 1 and 2 Federal candidate, and other special status species to promote their conservation; maintaining or promoting the physical and biological conditions to sustain native populations and communities; emphasizing native species in the support of ecological function:

a. Desired plant communities (DPC) should be mutually developed between the agency and the permittee as management targets. Manage existing plant community toward desired plant community recognizing site potential.

b. Wildlife population trends should be measured by a series of surveys. Use areas, distribution, composition; sex and age ratios and reproductive rates should be established for key species.

c. The habitats and populations of candidate, sensitive, rare, New Mexico State listed, or other special status categories should be managed in accordance with state law. Determine the role of local populations with respect to national population levels. If special habitat management actions are required the agency should conduct a private sector impact assessment.

d. Humans are an integral part of the biotic community and safeguards should be taken to promote life, liberty and the pursuit of happiness.

e. Until RMP production goals are specifically established and desired plant communities designated, grazing practices should provide for a satisfactory or long term increasing vegetative and litter cover to meet statutory requirements, established uses, and protection of the soils to not exceed acceptable soil loss tolerances, thereby assuring a full range of options for future land management decisions.

Fundamental Guideline: Management Guidelines are any reasonable and practical management options that move rangelands toward statewide standards. Guidelines are based on long term scientific data and trends, past and present management experience, and public input. Guidelines are developed and implemented at the local or allotment level and should be reflected in the management plan.

State Primacy Considerations

1. The jurisdiction over the wildlife belongs to the state of New Mexico.
2. Where appropriate the New Mexico Wildlife Conservation Act will be used for the development of recovery plans for threatened or endangered species on BLM lands in New Mexico.
3. The New Mexico Department of Agriculture administers the permitting for the collection native plants.

Statutory or Regulatory Reasoning

1. Site-specific actions for federally listed threatened and endangered species shall conform to ESA procedures in Section 7, 9 and 10.
2. The proposed standard and guidelines exceed the fallback standards and guidelines 43 CFR Ch.11 §4180.2(f); address the minimum standards requirements of 43 CFR Ch.11 §4180.2(d); and address the minimum guidelines requirements of 43 CFR Ch.11 §4180.2(e) and ensure that the conditions set forth in 43 CFR Ch.11 §4180.1(a) through (d) are achieved.

Standard

Watershed Health (Upland): Satisfactory upland conditions are maintaining soil stability within ecological sites, with desired plant community and site potential as its basis, indicated by optimum infiltration, capture, and delivery of precipitation, measured against established RMP goals as determined by statutory requirements balanced with the conservation of individual, social and cultural/historic economic opportunities to promote, sustain and enhance local communities.

Watershed Health (Riparian): Sustainable riparian conditions that maintain soil stability within appropriate soil loss tolerance levels and maintaining or promoting stream channel morphology for each ecological site, measured against established RMP goals as determined by statutory requirements balanced with the conservation of individual, social and

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cultural/historic economic opportunities to promote, sustain and enhance local communities.

Grazing Guidelines

For the purposes of maintaining or promoting subsurface soil conditions that support permeability rates appropriate to climate and soils; maintaining, improving or restoring riparian-wetland functions including dissipation, sediment capture. groundwater recharge, and stream bank stability; maintaining or promoting stream channel morphology (e.g. gradient, width/depth ratio, channel roughness and sinuosity) and functions appropriate to climate and landform; maintaining, restoring or enhancing water quality to meet management objectives, such as meeting wildlife needs

a. Upland and riparian monitoring protocol will be developed at the local level on a site-specific basis.
b. Under specifically established RMP production goals, monitoring protocols and upland/riparian desired future conditions, grazing practices should provide for satisfactory or long term sustainable conditions to meet statutory requirements, established uses, and protection of the soils to not exceed acceptable soil loss tolerances, thereby assuring a full range of options for future land management decisions.

Fundamental Guideline: Management Guidelines are any reasonable and practical management options that move rangelands toward statewide standards. Guidelines are based on long term scientific data and trends, past and present management experience, and public input. Guidelines are developed and implemented at the local or allotment level and should be reflected in the management plan.

State Primacy Considerations

1. The planning for and management of soil and water resources belong to the New Mexico Soil and Water Conservation Districts.
2. The jurisdiction over water quantity in streams and impoundments belongs to the New Mexico State Engineer.
3. The jurisdiction over water quality belongs to the New Mexico Water Quality Control Commission and the Environment Department.

Statutory or Regulatory Reasoning

1. Under 43 CFR §1610.4-4(e) and (g) the agency is required to consider the ability of the resource area to respond to local needs when formulating reasonable alternatives.
2. The reasoning behind deferring to the water quality jurisdiction of New Mexico is located in 43 CFR Ch.11§4180.1(c).
3. The proposed standard and guidelines exceed the fallback standards and guidelines 43 CFR Ch.11 §4180.2(f); address the minimum standards requirements of 43 CFR Ch.11§4180.2(d); and address the minimum guidelines requirements of 43 CFR Ch.11 §4180.2(e) and ensure that the conditions set forth in 43 CFR Ch.11 §4180.1(a) through (d) are achieved.

Comments

1. Upland and riparian management are inextricable. Therefore, management prescriptions must take the conditions of both into consideration. This consideration must be made even if the uplands or riparian areas are private property or under New Mexicos or other Federal agencys jurisdiction.

Standard

Human Dimension: Established RMP production goals of sustainable goods and services per the Multiple Use Sustained Yield Act, and other statutory requirements, shall be maintained balanced with the conservation of individual, social and cultural/historic economic opportunities to promote, sustain and enhance local communities.

Meaning that: New Mexico BLM in coordination with state, tribal and local governments, individuals and other concerned public and private organizations will use available means and measures to create and maintain conditions under which people and nature can coexist. They will initiate an approach to public land management that is integrated with social, cultural, ecological and economic goals of local communities while sustaining ecological sites.

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Grazing Guidelines

a. The natural resources of New Mexico should be managed to contribute to a diverse, balanced, competitive and resilient economy and to provide opportunity, a variety of individual choice and risk taking in a responsible manner. This guideline may include but is not limited to consideration of impacts to employment, earnings, per capita income, investment income, federal government payments to the State, Tribal and Local governments, and tax base.
b. Historic production patterns from the natural resource will serve as the baseline for future production decisions. Deviation away from the historic patterns must be analyzed with respect to local community impacts.

Fundamental Guideline: Management Guidelines are any reasonable and practical management options that move rangelands toward statewide standards. Guidelines are based on long term scientific data and trends, past and present management experience, and public input. Guidelines are developed and implemented at the local or allotment level and should be reflected in the management plan.

State Primacy Considerations

1. The primary jurisdiction over the health, welfare and safety of New Mexico citizens belongs to the State, Tribal, County and Municipal governments.

Statutory or Regulatory Reasoning

1. Under 43 CFR 1610.4-4(e) and (g) the agency is required to consider the ability of the resource area to respond to local needs when formulating reasonable alternatives.
2. The proposed standard and guidelines exceed the fallback standards and guidelines 43 CFR Ch.11 §4180.2(f); address the minimum standards requirements of 43 CFR Ch.11 §4180.2(d); and address the minimum guidelines requirements of 43 CFR Ch.11 §4180.2(e) and ensure that the conditions set forth in 43 CFR Ch.11 §4180.1(a) through (d) are achieved.

FALLBACK ALTERNATIVE

The fallback standards and guidelines as described in 43 CFR Subpart 4180.2 constitute another alternative that was considered. The Fallback Alternative was developed at the national level with public input from a variety of interested publics from across the nation. The final rules and regulations published in the *Federal Register* on February 22, 1995 state in 43 CFR 4180.2(f):

> In the event that State or regional standards and guidelines are not in effect by February 12, 1997, and until such time as locally developed standards and guidelines are in effect, the fallback standards and guidelines provided in 43 CFR 4180 will go into effect and will be implemented.

The New Mexico RAC sent a request to the Secretary of the Interior requesting a six-month extension to the February 12, 1997 date for the fallback standards and guidelines to take effect. The November 25, 1996 *Federal Register* amended the regulations to allow the Secretary of the Interior discretion to postpone implementation of the fallback standards and guidelines beyond February 12, 1997, but not to exceed the six-month period ending August 12, 1997. (The full text of 43 CFR 4180, which includes the fallback standards and guidelines, is included as Appendix A.)

The fallback standards for public land health are as follows:

(a) Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and landform.

(b) Riparian-wetland areas are in properly functioning condition.

(c) Stream channel morphology (including but not limited to gradient, width/depth ratio, channel roughness and sinuosity) and functions are appropriate for climate and landform.

(d) Healthy, productive and diverse populations of native species exist and are maintained.

The fallback guidelines for livestock grazing are as follows:

(a) Management practices maintain or promote adequate amounts of ground cover to support infiltration, maintain soil moisture storage, and stabilize soils;

(b) Management practices maintain or promote soil conditions that support permeability rates that are appropriate to climate and soils;

(c) Management practices maintain or promote sufficient residual vegetation to maintain, improve or restore riparian-wetland functions of energy dissipation, sediment capture, groundwater recharge and stream bank stability.

(d) Management practices maintain or promote stream channel morphology (e.g., gradient, width/depth ratio, channel roughness and sinuosity) and functions that are appropriate to climate and landform;

(e) Management practices maintain or promote the appropriate kinds and amounts of soil organisms, plants and animals to support the hydrologic cycle, nutrient cycle, and energy flow;

(f) Management practices maintain or promote the physical and biological conditions necessary to sustain native populations and communities;

(g) Desired species are being allowed to complete seed dissemination in 1 out of every 3 years (Management actions will promote the opportunity for seedling establishment when climatic conditions and space allow.);

(h) Conservation of federal threatened or endangered, Proposed, Category 1 and 2 candidate, and other special status species is promoted by the restoration and maintenance of their habitats;

(i) Native species are emphasized in the support of ecological function;

(j) Non-native plant species are used only in those situations in which native species are not readily available in sufficient quantities or are incapable of maintaining or achieving properly functioning conditions and biological health;

(k) Periods of rest from disturbance or livestock use during times of critical plant growth or regrowth are provided when needed to achieve healthy, properly functioning conditions (The timing and duration of use periods shall be determined by the authorized officer.);

(l) Continuous, season-long livestock use is allowed to occur only when it has been demonstrated to be consistent with achieving healthy, properly functioning ecosystems;

(m) Facilities are located away from riparian-wetland areas wherever they conflict with achieving or maintaining riparian-wetland function;

(n) The development of springs and seeps or other projects affecting water and associated resources shall be designed to protect the ecological functions and processes of those sites; and

(o) Grazing on designated ephemeral (annual and perennial) rangeland is allowed to occur only if reliable estimates of production have been made, an identified level of annual growth or residue to remain on site at the end of the grazing season has been established, and adverse effects on perennial species are avoided.

New Mexico BLM was asked to interpret what the guidelines (a through o) listed above would mean if selected by the decision maker. The following is how New Mexico BLM would interpret these guidelines.

a. Management practices maintain or promote adequate amounts of ground cover to support infiltration, maintain soil moisture storage, and stabilize soils.

This means that a percent ground cover target would be established for the ecological sites. The cover target would be consistent with the capability of the site and be developed using existing research data and monitoring studies data. Ground cover could be in the form of vegetation, litter, and rock. The vegetation and litter are manageable units. Vegetative cover and litter could be a function of stocking rate (intensity of use) and distribution of animals. Over stocking could be resolved through reducing the number of animals. Distribution problems that cause too much use of desirable locations or on desirable forage plants can be resolved through a deferment program and/or through construction of range improvements such as water developments.

b. **Management practices maintain or promote soil conditions that support permeability rates that are appropriate to climate and soils.**

This guideline would respond to soil compaction issues. When the soil is compacted, the permeability rate is reduced. On high winter precipitation ranges, use by animals in the spring may be delayed to allow the soils to dry. Although compaction problems are not common on BLM, managed lands, in cases were compaction is a problem, use will be deferred until grazing can occur without unacceptable levels of compaction.

c. Management practices maintain or promote sufficient residual vegetation to maintain, improve or restore riparian-wetland functions of energy dissipation, sediment capture, groundwater recharge and stream bank stability.

The riparian zone normally provides numerous unique qualities that make it a concentration zone for many human and animal activities. The moist micro environment is attractive to the casual and long-term occupants of the public lands. For example, humans often use the riparian area for camping, fishing, hunting, rafting, picnicking, and transportation routes. Numerous animals, wild and domestic, depend on the riparian zone for water, green forage and other food, cover, and escape routes.

Often human and animal users of the riparian zone will continue to use the riparian zone until it is heavily used and little vegetation is left for energy dissipation and sediment capture. This heavy use will continue unless the users are forced out to let the vegetation grow. On most BLM ranges with riparian zones, fences have been used to limit grazing in the riparian zone. However, there are cases where strip fencing the riparian zone has not been and may not in the future be required.

d. Management practices maintain or promote stream channel morphology (e.g., gradient, width/depth ratio, channel roughness and sinuosity) and functions that are appropriate to climate and landform.

When the riparian zone is heavily used, the stream widens and becomes more shallow, and sedimentation/erosion is increased. On most BLM ranges with riparian zones, fences have been used to limit use in the riparian zone and stream channel. For the riparian zone to properly function, the vegetation and stream channel must be in acceptable condition.

e. Management practices maintain or promote the appropriate kinds and amounts of soil organisms, plants, and animals to support the hydrologic cycle, nutrient cycle and energy flow.

The characteristics of the soil and plant community are primary indicators of the health of the hydrologic cycle, nutrient cycle, and energy flow. The distribution or spacing of plants, litter distribution and incorporation, plant rooting depth, photosynthetic period of the community, community age classes, and seed germination are key indicators of health.

Literally this guideline says that management practices will maintain or promote appropriate kinds and amounts of soil organisms, plants, and animals.

Basically, nutrients and energy are captured by plants. Animals eat the plants and return the nutrients to the soil. Soil organisms further break down the nutrients. This process builds the soil for water storage and more plants.

The system should be in balance. The animal use of the plants needs to occur but it must be in balance with the plant forage base. A balanced system will include proper animal use (not to high or low) and grazing practices that provide for adequate ground cover for site protection and allow the native plants to complete their life cycle. If an area is out of balance, animal numbers, distribution and/or deferment should be analyzed.

f. Management practices maintain or promote the physical and biological conditions necessary to sustain native populations and communities.

This guideline establishes that management practices (grazing practices as well as rangeland improvements) will provide for physical, and biological conditions necessary to sustain (nourish and support) native wildlife and plants.

g. Desired species are being allowed to complete seed dissemination in 1 out of every 3 years (Management actions will promote the opportunity for seedling establishment when climatic conditions and space allow).

First, it should be recognized that year-long use has a different impact than growing season long use. For year-long use, all forage use does not occur during the growing season. In New Mexico with its short summer growing season, year-long use often defers about 1/2 to 3/4 of the forage for use during the dormant season. However, the forage that is desirable by species or location may not receive a deferment. On ranges that are uniform in species, well watered, gentle sloping, and properly used, the desired species can set seed every year that the precipitation is adequate.

On the other hand, ranges that are grazed only during the growing season, rough, poorly watered, or have "ice cream" species may have to have a deferment program to achieve proper use.

h. Conservation of Federal threatened or endangered, proposed, category 1 and 2 candidate, and other special status species is promoted by the restoration and maintenance of their habitats.

Threatened and endangered species are to be protected and promoted by BLM as directed by the Endangered Species Act.

i. Native species are emphasized in the support of ecological function.

This means that programs that are developed and implemented to promote ecological function will primarily use native species. For example, fire rehabilitation programs, to increase forage, would use native species.

j. Non-native plant species are used only in those situations in which native species are not readily available in sufficient quantities or are incapable of maintaining or achieving properly functioning conditions and biological health.

This guideline is really the same as (i)- BLM and permittees can use non-native seed but the first choice is native seed.

k. Periods of rest from disturbance or livestock use during times of critical plant growth or regrowth are provided when needed to achieve healthy, properly functioning conditions (The timing and duration of use periods shall be determined by the authorized officer).

According to this guideline, if BLM authorized officer believes that growing season deferment is needed to achieve the management objectives, the authorized officer can prescribe it. The process of determining timing and duration of the use periods would include appropriate consultation, cooperation, and coordination.

l. Continuous, season-long livestock use is allowed to occur only when it has been demonstrated to be consistent with achieving healthy, properly functioning ecosystems.

This guideline says that continuous (year-long), season-long (growing season-long every year) grazing is allowed to occur where it is demonstrated to be consistent with ecosystem function.

Although it is generally accepted that year-long use is acceptable and perhaps preferred on many southwestern ranges, this guideline would require each allotment with (1) areas not meeting the standard and (2) year-long or growing season-long livestock use to be monitored to demonstrate that the livestock management practices are acceptable. Monitoring programs would be developed through appropriate consultation, cooperation, and coordination.

m. Facilities are located away from riparian-wetland areas wherever they conflict with achieving or maintaining riparian-wetland function.

This guideline would require that constructed range improvements be moved if they are interfering with riparian objectives.

n. The development of springs and seeps or other projects affecting water and associated resources shall be designed to protect the ecological functions and processes of those sites.

This guideline has been followed by BLM for some time; however, a review of projects and perhaps modification of older projects would be necessary.

o. Grazing on designated ephemeral (annual and perennial) rangeland is allowed to occur only if reliable estimates of production have been made, an identified level of annual growth or residue to remain on site at the end of the grazing season has

been established, and adverse effects on perennial species are avoided.

There are no designated ephemeral ranges on BLM-managed lands in New Mexico at this time. Should some be designated, this guideline would apply.

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER DETAILED STUDY

The following alternatives were considered during scoping for this analysis, and were eliminated from detailed study.

Suitability Alternative

A number of those commenting during the scoping period suggested that BLM incorporate suitability analysis into the rangeland health standards and livestock grazing guidelines. The comments suggested that areas with steep slopes, low amounts of precipitation, or certain soils be classified as unsuitable for livestock grazing. Livestock grazing would then be stopped on the unsuitable areas.

After consideration, an alternative incorporating suitability was not developed for analysis in this EIS because it is inconsistent with BLM's current approach to grazing management. The suitability approach historically has been used by BLM as a part of the interpretation process for range surveys. In the past, range surveys or inventories were used to estimate grazing capacity in the adjudication process.

The determination of suitability or unsuitability was one step in completion of a range survey. In that process, areas classified as unsuitable were rated as having a zero capacity by the survey. The unsuitable lands were often intermixed with suitable areas within a given area. Therefore, suitability was used only for a level of expected forage use and was not used to determine if grazing should be eliminated.

Currently, BLM uses rangeland monitoring data to adjust livestock grazing capacity information rather than the one-time forage surveys. By using monitoring to evaluate grazing capacity, BLM focuses on looking at the effects of grazing on-the-ground as opposed to projecting possible effects. Because BLM now uses a more up-to-date technique of rangeland monitoring rather than the older method, suitability is no longer used and thus is not considered as a viable alternative.

No Grazing Alternative

This alternative has been analyzed in detail in the national Rangeland Reform '94 EIS, and in previous EIS documents. Livestock grazing is authorized by law and regulation, and is well established within the BLMs multiple-use mandate. Resource conditions do not warrant a statewide prohibition of livestock grazing. Analysis of a no grazing alternative is not considered feasible or necessary.

CHAPTER

3

CHAPTER 3
AFFECTED ENVIRONMENT

INTRODUCTION

This chapter describes the physical, biological, social, and economic environment that would be affected by implementation of the proposed action or other alternatives. Not all aspects of the environment are addressed; generally only those aspects affected and those that influence effects on public land resources and resource uses are discussed.

The public lands of New Mexico are diverse, due to the intersection of at least five major ecosystems, including the Great Plains, Great Basin, Chihuahuan Desert, the Rocky Mountain, and Sierra Madre. Implicit in the presence of these ecosystems is a diversity of climate, geology, landform, elevation, and other physical attributes contributing to their uniqueness.

MAJOR LAND RESOURCE AREAS (MLRAs)

For the purposes of this EIS, the affected environment descriptions of vegetation and soils are analyzed based on the Major Land Resource Areas (MLRAs) described by the U.S. Department of Agriculture, NRCS (1981). Descriptions of the MLRAs used in this section are nearly verbatim from the NRCS publication. These descriptions include BLM acreage estimates and a brief analysis of the existing vegetation types (biomes) in each MLRA. Each MLRA is given a code number. These data were derived from geographic information system (GIS) analysis of vegetation types on a small scale map produced by the New Mexico Gap Analysis Project (Thompson et al. 1996). The Gap Project vegetation types were grouped into biome types (biological communities characterized by similar plant life forms) which provide a coarse, regional scale description of biological communities. Biome types used included the following:

- **Conifer forest** - all conifer forest types including ponderosa pine.
- **Woodland** - all pinon-juniper types, mountain scrub, and interior chaparral
- **Grassland** - all grasslands including Great Plains grasslands, Chihuahuan Desert grasslands, and Great Basin desert grasslands.
- **Desert** - all desert types including, Chihuahuan Desert and Great Basin Desert

Descriptions of the biomes within each MLRA are contained within the "BLM Estimate of Existing Vegetation" section in each MLRA description acreages and percentages of MLRA's and Biomes on public land are presented in Tables 3-1 and 3-2. Following the MLRA descriptions are two sections that include an overall summary of ecological status of vegetation statewide and the current status of riparian systems in New Mexico. Riparian systems are treated separately, due to the small percentage of land they occupy and the disproportionately high importance they have to our natural systems.

The following MLRA descriptions were taken directly from *Land Resource Regions and Major Land Resource Areas of The United States* (United States Department of Agriculture, Soil Conservation Service 1981) *Agriculture Handbook 296*. New Mexico MLRA's are also shown on Map 3-1. Photos in this section were taken in the MLRA being described to provide the reader a perspective of the MLRA described.

36-New Mexico and Arizona Plateaus and Mesas

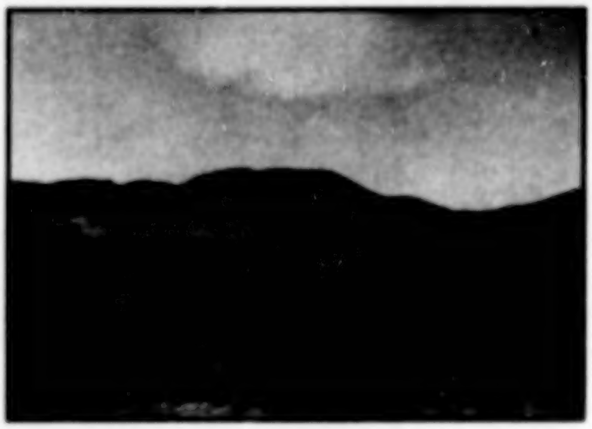

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TABLE 3-1
ACRES AND PERCENT MLRA AND BIOMES ON PUBLIC LAND IN NEW MEXICO

MLRA Name	MLRA Code	MLRA Total Acres	Biomes					
			Conifer Forest	Woodland	Grassland	Desert	Other	Riparian (segments)
New Mexico and Arizona Plateaus and Mesas	**36**	2,619,000	10,000	1,262,800	1,191,800	116,800	37,900	91
	%	19	0.4	48	46	5	1	33
San Juan River Valley Mesas and Plateaus	**37**	786,000	0	72,700	586,000	110,600	16,500	37
	%	6	0	9	75	14	2	14
Arizona and New Mexico Mountains	**39**	325,000	1,400	228,900	89,500	3,200	1,700	17
	%	2	0.2	71	11	<1	<1	6
Southeastern Arizona Basin and Range	**41**	153,000	0	40,300	40,100	63,200	8,900	1
	%	1	0	26	26	41	6	<1
Southern Desert Basins, Plains, and Mountains	**42**	6,677,000	100	836,000	2,571,600	2,998,500	270,600	78
	%	49	<1	13	43	50	5	29
Southern Rocky Mountains	**48A**	41,000	2,000	30,300	8,200	300	100	2
	%	<1	5	74	20	1	<1	<1
High Intermountain Valleys	**51**	209,000	2,900	86,100	5,400	114,200	300	3
	%	2	1	41	3	55	<1	1
Pecos-Canadian Plains and Valleys	**70**	2,675,000	100	527,500	1,122,400	997,600	27,000	430
	%	20	<1	20	42	37	1	16
Southern High Plains	**77**	10,000	0	3,400	6,000	100	200	0
	%	<1	0	35	62	1	3	0
Total		**13,495,000**	**16,500**	**3,088,100**	**5,621,000**	**4,404,400**	**363,200**	**448**
Total %		**100**	**0.1**	**23**	**42**	**33**	**3**	

Source: BLM GIS analysis of USDA NRCS MLRA boundaries and vegetation data derived from the U.S. Geological Survey BRD New Mexico Gap Analysis project

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TABLE 3-2
MAJOR LAND RESOURCE AREAS - LAND ACREAGE IN NEW MEXICO

MLRA - Number and Name	Total for New Mexico	Public Land Acres	Percent of MLRA in New Mexico that is Public Land
36 - New Mexico and Arizona Plateaus and Mesas	14,621,000	2,619,000	18
37 - San Juan River Valley Mesas and Plateaus	3,966,000	786,000	20
39 - Arizona and New Mexico Mountains	6,299,000	325,000	5
41 - Southeastern Arizona Basin and Range	778,000	152,000	20
42 - Southern Desertic Basins, Plains, and Mountains	17,654,000	6,677,000	38
48A - Southern Rocky Mountains	5,366,000	41,000	1
51 - High Intermountain Valleys	544,000	209,000	38
70 - Pecos-Canadian Plains and Valleys	20,998,000	2,675,000	13
77 - Southern High Plains	7,544,000	10,000	<1
MLRA Total (rounded)	**77,770,000**	**13,500,000**	**17**

Source: BLM GIS analysis of USDA NRCS MLRA boundaries and public land status records

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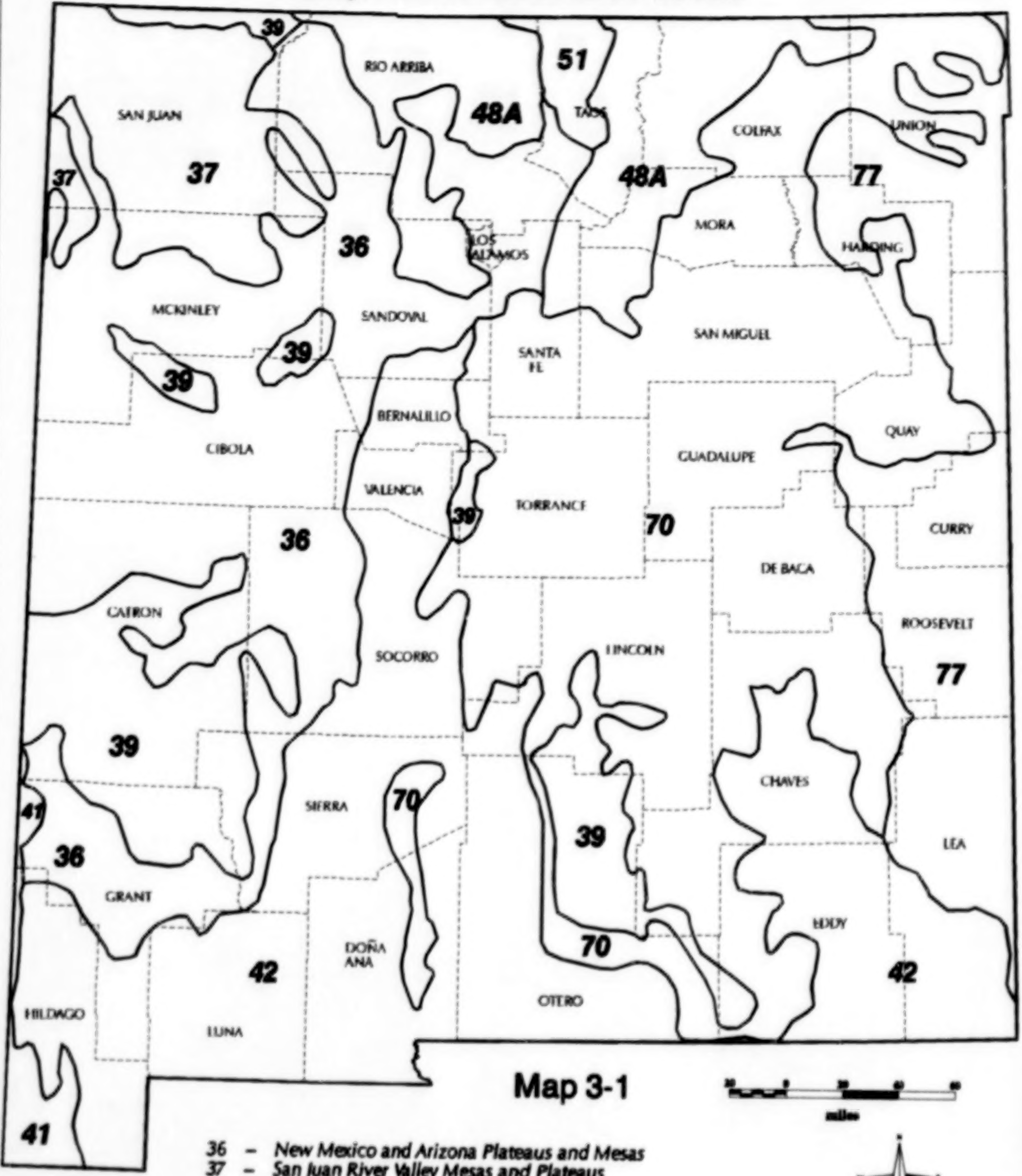
New Mexico
Major Land Resource Areas



Map 3-1

36 – *New Mexico and Arizona Plateaus and Mesas*
37 – *San Juan River Valley Mesas and Plateaus*
39 – *Arizona and New Mexico Mountains*
41 – *Southeastern Arizona Basin and Range*
42 – *Southern Desertic Basins, Plains, and Mountains*
48A – *Southern Rocky Mountains*
51 – *High Intermountain Valleys*
70 – *Pecos-Canadian Plains and Valleys*
77 – *Southern High Plains*

Produced by the New Mexico State Office Geographic Sciences Team, Bureau of Land Management, September 02, [illegible]

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.

Land Use: This MLRA occurs on approximately 2,619,000 acres of public land in New Mexico.

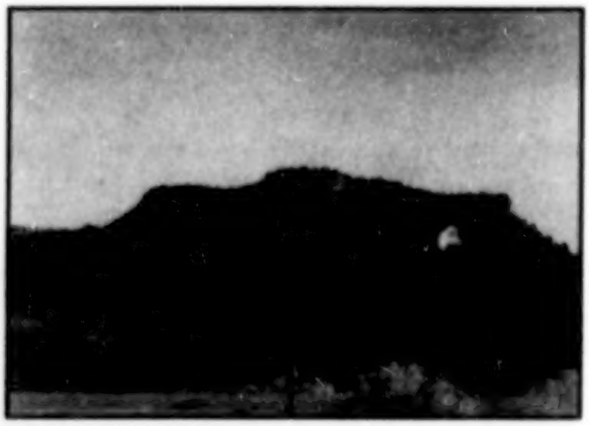
Elevation and topography: Elevation ranges from 1,500 to 2,300 meters, but a few isolated mountains are higher than 2,600 meters. These plateaus and mesas have gentle slopes, but precipitous slopes are along valley walls and edges of the mesas.

Climate: The average annual precipitation is between 250 and 325 millimeters (mm) in most of the area but higher elevations receive an average of 375 mm. About two-thirds of the precipitation falls from midsummer to early autumn. The average annual temperature ranges from 9 to 12 degrees celsius (°C), and the average freeze-free period is between 120 to 180 days.

Water: Water is scarce because of the low precipitation and sparse streamflow. A small amount of water is available for irrigation along the major streams that flow into the area from surrounding mountains. Navajo Lake is near the northern border.

Soils: Most of the soils are Argids and Orthents. They are well drained and fine textured to medium textured and have a mesic temperature regime, an aridic moisture regime, and mixed mineralogy.

Potential natural vegetation: Most of this area supports grassland vegetation. Indian ricegrass, blue grama, dropseed, and galleta are the major species. Alkali sacaton, fourwing saltbush, winterfat, and rabbitbrush grow in the valleys between mesas. Pinon-juniper woodland occur at the higher elevations and also on shallow soils and escarpments. The understory includes western wheatgrass, galleta, sideoats grama and, in some places, big sagebrush.



BLM Estimate of existing vegetation: Existing vegetation within this MLRA currently comprises of less than 1 percent conifer forest, 48 percent woodland, 46 percent grassland (primarily Great Basin grassland types), and 5 percent desert (dominated by Great Basin desert types). It is believed that desert has replaced some of the area formerly occupied by grassland due to past land use practices (Dick-Peddie 1993, McClaran and VanDevender 1995).

37-San Juan River Valley Mesas and Plateaus

Land use: This MLRA occurs on approximately 786,000 acres of public land in New Mexico.

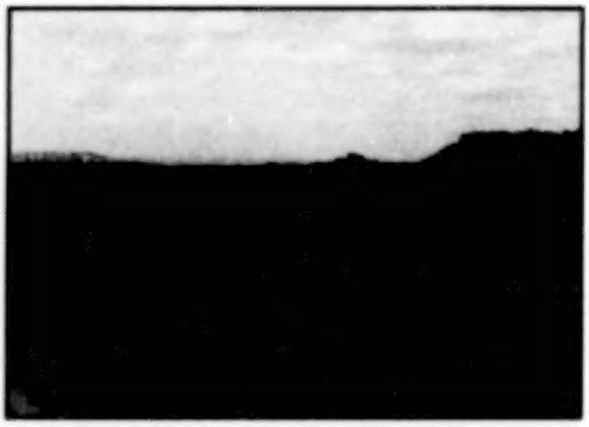
Elevation and topography: Elevation ranges from 1,500 to 2,000 meters. Gently sloping broad valleys and plains are bordered by deeply dissected bands of steep slopes and sharp local relief. Margins of mesas and a few isolated low mountain ranges are also steeply sloping.

Climate: The average annual precipitation ranges from 175 to 250 mm. About one-half of the precipitation falls from midsummer to early autumn. Average annual temperature 10 and 12°C, and the average freeze-free period is between 140 and 165 days.

Water: The low precipitation and intermittent streamflow provide a small amount of water for agriculture. A few major streams supply water for irrigation. Water from Navajo Lake is to be used for an irrigation project planned for the area. Ground water is scarce, of poor quality, and mostly untapped.

Soils: Most of the soils are Orthents. They are well drained and medium textured and have a mesic temperature regime, aridic moisture regime, and mixed mineralogy.

Potential natural vegetation: This area supports desert shrub vegetation. Indian ricegrass, big sagebrush, fourwing saltbush, and galleta are major species. Shadscale, greasewood, alkali sacaton, and fourwing saltbush occur on the bottom lands. Pinon-juniper woodland, along with mountain mahogany, western wheatgrass, and galleta occur at higher elevations. Most of the western part of the area is grassland on which Indian ricegrass, alkali sacaton, and sand dropseed are dominant.



BLM Estimate of existing vegetation: Existing vegetation within this MLRA is approximately 9 percent woodland, 75 percent grassland and 14 percent desert. The grassland and desert types are those of the Great Basin flora. It is believed that desert has replaced some of the area formerly occupied by grassland due to past land use practices (Dick-Peddie 1993, McClaran and VanDevender 1995).

39-Arizona and New Mexico Mountains

Land use: This MLRA occurs on approximately 325,000 acres of public land in New Mexico.

Elevation and topography: In most places, elevation ranges from 1,400 to 2,400 meters, with a maximum height of 3800 meters. This area is mostly very hilly and mountainous, but an upland plateau is dissected by many deep canyons.

Climate: The average annual precipitation ranges 275 to 900 mm, increasing with elevation. The average annual temperature is between 5 and 15°C. In timbered areas at higher elevations the average is 7°C, and at lower elevations it is 10°C. The average freeze-free period ranges from less than 70 days at higher elevations to 170 days at lower elevations, averaging about 115 days.

Water: This MLRA supplies water for much of the adjoining irrigated areas. Because more than one-half of the annual precipitation occurs in winter, there is a general deficiency of moisture during the growing season. Several of the larger streams and a few of their larger tributaries maintain a yearlong flow. Much of this water is stored in reservoirs near or below the southern edge of the area and is used for irrigation and municipal water supplies. Small natural and artificial lakes at higher elevations are used for fishing and other recreation. Annual runoff into all reservoirs is highly variable, and most of the smaller lakes and reservoirs are dry in some years. Ground water is limited and usually occurs at great depth.

Soils: The dominant soils are Borolls, Boralfs, Ustolls, Ustalfs, Orthents, and Orthids. They have a cryic, frigid, or mesic temperature regime, depending mainly on elevation.

Potential natural vegetation: This area supports alpine vegetation, conifer forests, chaparral, and grasses because of the broad elevation range. Such cushion plants as moss campion, kobresia, alpine timothy, and many low-growing forbs grow above timberline. Spruce-fir woodland characterizes the area below timberline. Aspen grows on sites that have not been disturbed by past fires. The under-story includes Thurber fescue, brome, bluegrasses, mountain muhly,

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Arizona fescue, lupine, aspen peavine, penstemons, and daisies. The major part of the area is a vast ponderosa pine forest. Common understory plants include bromes, Junegrass, pine dropseed, wheatgrasses, mountain muhly, blue grama, sedges, and snowberry. Pinon-juniper woodland is at an elevation below 2,100 meters. The understory includes blue grama, tobosa, sideoats grama, and western wheatgrass. Below an elevation of about 1,800 meters, turbinella oak, mountain mahogany, hollyleaf buckthorn, ceanothus, and manzanita grow along with sideoats grama, blue grama, Junegrass, longtongue muttongrass, squirreltail, and bluegrasses.

BLM Estimate of existing vegetation: Existing vegetation within this MLRA comprises less than 1 percent conifer forest, 71 percent woodland, and 11 percent grassland (primarily Plains and Great Basin grassland types) and less than 1 percent desert. The conifer type is composed mainly of lower elevation ponderosa pine forest. It is expected that the woodland biome has replaced portions the grassland biome due to past land use practices (Dick-Peddie 1993, McClaran and VanDevender 1995).

41-Southeastern Arizona Basin and Range

Land use: This MLRA occurs on approximately 153,000 acres of public land in New Mexico. Most of this area is used for grazing.

Elevation and topography: Elevation ranges from 800 to 1,400 meters in most places and from 1,500 meters to 1,800 meters in the mountains. On some peaks, however, elevation is 2,700 meters. This area consists of southeast-northwest-trending mountain ranges with relatively smooth valleys separating the mountains.

Climate: The average annual precipitation ranges from 275 to 375 mm, but as much as 900 mm at the higher elevations. More than half of the precipitation falls during July, August, and September. Snow falls occasionally in winter. The average annual temperature ranges from 13 to 17°C, and the average freeze-free period lasts between 150 and 250 days.

Water: None of the streams flow continuously, although they may have water in them for several months each year. There are no lakes or reservoirs of consequence. Water for irrigation generally is obtained by pumping ground water, and there has been a noticeable decrease in the ground water level in the last several years. Water quality is generally satisfactory.

Soils: The dominant soils are Orthents, Ustolls, Argids, and Fluvents. They have a thermic temperature regime and mostly aridic moisture regime.

Potential natural vegetation: This area supports forest, savanna, and desert shrub vegetation. Pine-oak woodlands are at higher elevations. Ponderosa pine, Douglas-fir, live oak, New Mexico locust, Mexican piñon, buckbrush, and manzanita grow with an understory of muhlys, bluegrasses, sedges, pine dropseed, and squirreltail. Evergreen woodland savannas occur at intermediate elevations. Mexican blue oak, Emory oak, and turbinella oak are dominant species. Cone beardgrass, sideoats grama, blue grama, Texas bluestem, plains lovegrass, sprucetop grama, threeawns, and needlegrass characterize the under-story. Whitethorn, soaptree yucca, fourwing saltbush, mesquite, and ocotillo grow on drier soils at lower elevations. The understory consists of Rothrock grama, black grama, alkali sacaton, curly mesquite, plains bristlegrass, bush muhly, and lemongrass.

BLM Estimate of existing vegetation: Existing vegetation within this MLRA is approximately 26 percent woodland, 26 percent grassland, and 41 percent desert. This area is primarily representative of the Madrean vegetation that just enters the United States from Mexico, in southern Hidalgo County. This area has a high number of vegetation types and plant species found nowhere else in New Mexico.

42-Southern Desertic Basins, Plains, and Mountains

Land use: This MLRA occurs on approximately 6,677,000 acres of public land in New Mexico.

Elevation and topography: Elevation ranges from 800 to 1,500 meters in basins and valleys, but reaches more than 2,600 meters in the mountains. Broad desert basins and valleys are bordered by gently sloping to strongly sloping fans and terraces. Steep north-south-trending mountain ranges and many small mesas occur in the western portion of the MLRA.

Climate: The average annual precipitation ranges from 200 to 325 mm. Maximum precipitation is from midspring to midautumn. The average annual temperature is between 13 and 18°C. An average freeze-free period of 200 to 240 days occurs in most of the area but only 180 days are freeze-free in the northern ends of the Pecos and Rio Grande valleys.

Water: Scarce surface water and low precipitation are severe limitations to the use of the area for range. The Rio Grande and Pecos Rivers and a few of their larger tributaries are the only perennial streams. Water for irrigation generally is obtained from these rivers or from wells. Ground water in deep valley fill provides water for domestic use and livestock, and in places for some irrigation.

Soils: Most of the soils are Argids and Orthids. They are well drained and medium textured and have a thermic temperature regime, aridic moisture regime, and mixed or carbonatic mineralogy.

Potential natural vegetation: This area supports desert grass-shrub vegetation. Giant dropseed and mesa dropseed, along with scattered shrubs such as sand sagebrush and yuccas, grow on the sandier soils. Creosotebush, tarbush, catclaw, and javalinabush are on gravelly, calcareous foot slopes. Giant sacaton, vine-mesquite, desert willow, brickellbush, and mesquite grow in drainageways and depressions. Juniper, piñon, scattered ponderosa pine, and Douglas-fir occur on upper mountain slopes.

BLM Estimate of existing vegetation: Existing vegetation within this MLRA comprised less than 1 percent conifer forest, 13 percent woodland, 43 percent grassland (dominated by Chihuahuan Desert grassland), and 50 percent desert (dominated by Chihuahuan Desert types). It is projected that desert has replaced some of the area formerly occupied by grassland due to past land use practices (Dick-Peddie 1993, McClaran and VanDevender 1995).

48A-Southern Rocky Mountains

Land use: This MLRA occurs on approximately 41,000 acres of public land in New Mexico.

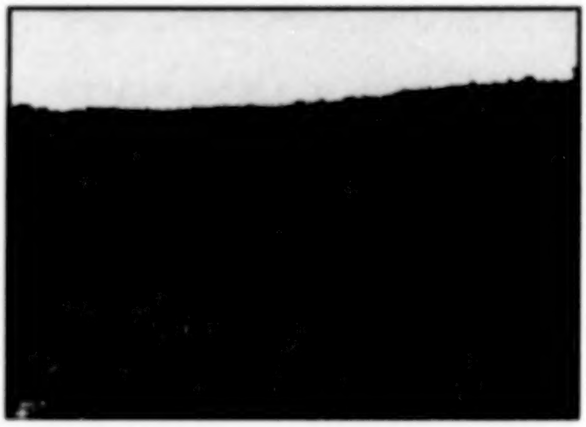
Elevation and topography: Elevation ranges from 2,300 to 4,300 meters. These strongly sloping to precipitous mountains are dissected by many narrow stream valleys with steep gradients. In places, the upper mountain slopes and crests are covered by snowfields and glaciers. High plateaus and steep-walled canyons are fairly common, especially in the west.

Climate: The average annual precipitation is generally between [illegible] and 750 mm, but as much as 1,025 mm or more can fall on some of the higher mountains. Most of the precipitation falls in winter as snow. The average annual temperature ranges from 0 to 7°C, and the Average freeze-free period--Generally less than 70 days.

Water: Water from the streams and lakes is abundant, and ground water is plentiful. The lower valleys depend on streamflow from this area for irrigation water.

Soils: Most of the soils are Boralfs. They are moderately deep, stony and very stony, and medium textured.

Potential natural vegetation: This area supports forests on upper slopes, alpine tundra above timberline, and shrub-grass vegetation at lower elevations. Grasses, sagebrush, and other shrubs grow on the lower slopes and in valleys. Lodgepole pine, aspen, Douglas fir, and ponderosa pine are major trees of the lower forest. Engelmann spruce, subalpine fir, white fir, and limber pine intermingled with stands of aspen are typical on the mountain slopes. Willow, alder, and birch trees grow along streams. The timberline zone is characterized by stunted and wind-twisted limber pine, bristlecone pine, Engelmann spruce, and subalpine fir. Alpine grasses, herbaceous plants, and shrubs constitute the treeless alpine tundra.



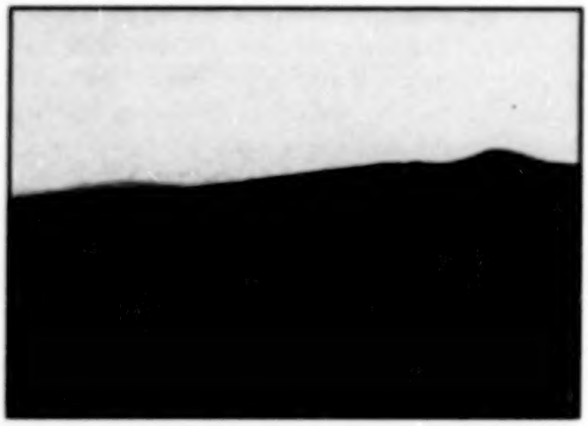
BLM Estimate of existing vegetation: Existing vegetation within this MLRA is approximately 5 percent conifer forest, 74 percent woodland, 20 percent grassland, and 1 percent desert. The BLM portions of this MLRA occur on the lower slopes of the mountains. The vegetation in these areas is woodland.

51-High Intermountain Valleys

Land use: This MLRA occurs on approximately 209,000 acres of public land in New Mexico.

Elevation and topography: Elevation ranges from 2,100 to 2,700 meters. Much of the area consists of nearly level to gently sloping old valley fill. Gently sloping to steep hills underlain by basalt are extensive in the south. Local relief is slight except in the south, where it is as much as 100 meters.

Climate: The average annual precipitation ranges from 150 to 500 mm, increasing from north to south. Most of the precipitation falls during the growing season. The average annual temperature is between 4 to 10°C, and the average freeze free period ranges from 100 to 140 days.



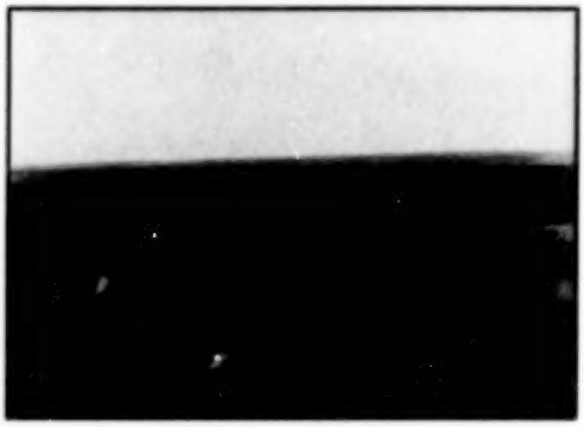
Water: The low precipitation in the north supports only a sparse cover of range plants, but rainfall in the south is adequate for a good cover of grass and sagebrush. Irrigation water is provided by the Rio Grande and small reservoirs on intermittent streams flowing into the area from surrounding mountains. The Chama River is an important water source in the south. Wells that tap ground water in the deep valley fill are also an important source of water for irrigation and domestic use. Salinity is a problem in much of the area.

Soils: Most of the soils are Argids, which are deep and moderately deep and coarse textured to medium textured. They have an aridic moisture regime, frigid temperature regime, and mixed mineralogy.

Potential natural vegetation: This area supports desert shrub-grassland vegetation. Greasewood, rabbitbrush, fourwing saltbush, saltgrass, alkali sacaton, wheatgrasses, sedges, and rushes are common at the lower elevations. Piñon-juniper, Indian ricegrass, blue grama, needle and thread, wheatgrasses, and bluegrasses grow at higher elevations. Narrowleaf cottonwood grows along the major streams.

BLM Estimate of existing vegetation: Existing vegetation within this MLRA is approximately 1 percent conifer forest, 41 percent woodland, 3 percent grassland, and 55 percent desert (primarily Great Basin desert types). It is likely that both woodland and desert have encroached into grassland areas due to past land use practices.

70-Pecos-Canadian Plains and Valleys



Land use: This MLRA occurs on approximately 2,675,000 acres of public land in New Mexico. Cattle and sheep grazing is the principal enterprise. Eastern slopes of the high mesas in the north are covered by forest vegetation, but the total forested area is small.

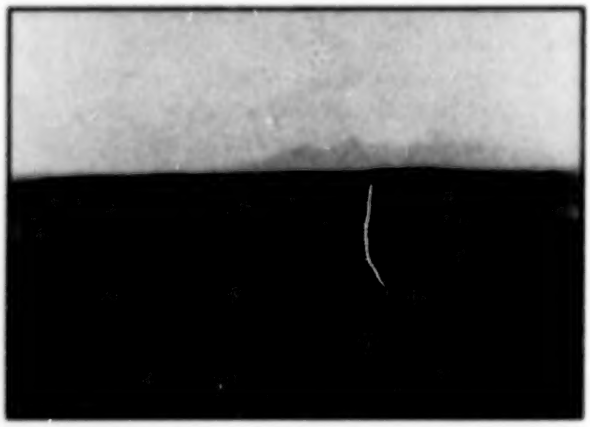
Elevation and topography: Elevation ranges from 1,200 to 2,100 meters, increasing gradually from southeast to northwest, but reaches 2,400 meters on a few mesas and mountains. Most of these dissected high plains are gently sloping to rolling, but bands of steep slopes and rough broken land border the stream valleys. A few isolated mountains, mesas, and canyon walls have steep to very steep slopes. Valley floors are mostly narrow and cut by stream channels.

Climate: The average annual precipitation is between 300 and 400 mm, but it fluctuates widely from year to year. Maximum precipitation is from late spring to early autumn. The average annual temperature ranges from 10 to 16°C, and the average freeze-free period is between 135 to 200 days, decreasing from southeast to northwest.

Water: Water is scarce throughout the area because of the low and erratic precipitation and the few perennial streams. Ground water in deep sand and gravel in the north and from limestone in the southern two-thirds of the area provides water for domestic use and for livestock, and locally it provides water for irrigation. Ground water is scarce in areas where shale and sandstone are near the surface.

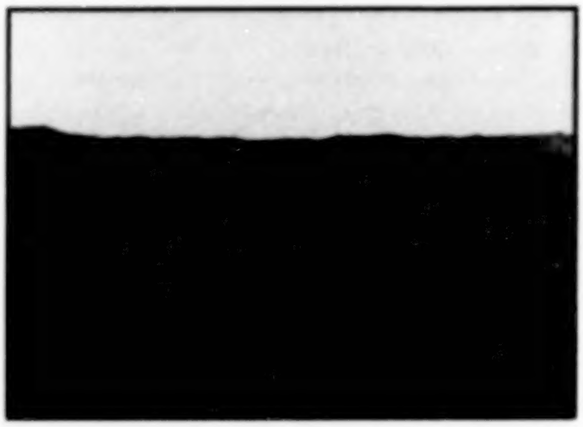
Soils: Most of the soils are Orthids, Argids, and Ustolls. They are well drained and moderately fine textured to moderately coarse textured and have mixed mineralogy. In the north and west, these soils have a mesic temperature regime and in the south and east a thermic temperature regime. They have an ustic or aridic moisture regime.

Potential natural vegetation: This area supports plains grassland vegetation that is dominated by short and mid-grasses. Blue grama is the dominant species. Western wheatgrass is the associated species in the northern part of the area, while lesser amounts of blue grama in association with black grama, galleta, New Mexico feathergrass, and a variety of shrubs, halt shrubs, and forbs characterize the southern part. Scattered juniper and piñon with an understory of sideoats grama, bottlebrush squirreltail, and western wheatgrass grow on shallow soils and in escarpments. Ponderosa pine grows on north and east slopes of the high mesas.



BLM Estimate of existing vegetation: Existing vegetation within this MLRA is made up of less than 1 percent conifer forest, 20 percent woodland, 42 percent grassland (Great Plains grassland types), and 37 percent desert. It is likely that both woodland and desert have encroached into grassland areas due to past land use practices. In addition, a large percentage of the woodland biome in this MLRA is dominated by shinnery oak which has dominated Great Plains mid- and tall grass types due to past land use practices.

77-Southern High Plains



Land use: This MLRA occurs on approximately 10,000 acres of public land in New Mexico.

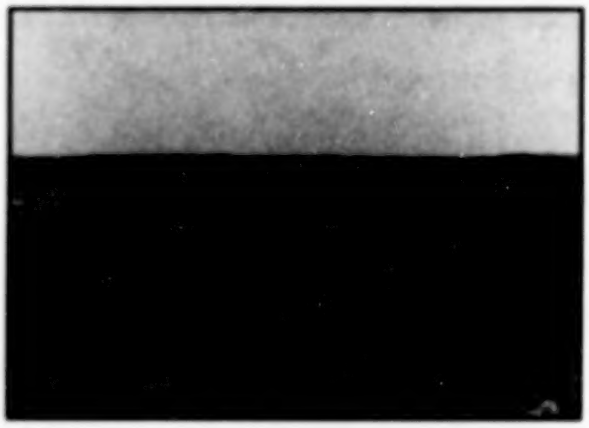
Elevation and topography: Elevation ranges from 800 to 2,000 meters, increasing gradually from southeast to northwest. These smooth high plains are gently sloping, but along the major rivers, breaks are very steep. The deep sand in the southwest has an irregular dune topography.

Climate: The average annual precipitation is between 375 and 550 mm, but it fluctuates widely from year to year. Maximum precipitation is from late spring through autumn. The low precipitation in winter is mainly snow. The average annual temperature ranges from 13 to 17°C, and the average freeze free period ranges from 130 to 220 days, increasing from north to south and from west to east.

Water: The moderately low and erratic precipitation serves as the source of water for dry-farmed crops and range. Perennial streams are few; they fluctuate widely in flow from year to year and are minimally used for irrigation. Sand and gravel throughout the central and northern parts of the area yield an abundance of ground water. Irrigation water is obtained from wells, but in the central and southern parts withdrawals exceed recharge, and the water table is gradually declining. Some areas formerly irrigated are now dry-farmed.

Soils: Most of the soils are Ustolls and Ustalfs. They are deep, fine, and medium textured and coarse textured. These soils have a mesic or thermic temperature regime, ustic moisture regime, and mixed or carbonatic mineralogy.

Potential natural vegetation: This area supports a short grass community characterized by blue grama and buffalograss. Mid-grasses such as sideoats grama grow on the more open soils and breaks. Tall grasses such as sand bluestem, little bluestem, and Indiangrass grow mixed with shinnery oak and sand sagebrush on the sandy soils. A wide range of perennial forbs grow on the sandier soils and are characterized by dotted gayfeather, pitchersage, sagewort, bush sunflower, and daleas.



BLM Estimate of existing vegetation:

Existing vegetation within this MLRA is approximately 35 percent woodland, 62 grassland, and about 1 percent desert. A large portion of the woodland biome in this MLRA is dominated by shinnery oak which has dominated Great Plains mid- and tall grass types due to past land use practices.

VEGETATION

BLM Management and Ecological Status of the Uplands

Ecological status of vegetative communities on public lands in New Mexico has been classified as 1 percent potential natural community (PNC), 35 percent late seral, 46 percent mid seral, 14 percent early seral, and 3 percent unclassified (USDI, BLM, 1996 - *Public Land Statistics*.) Trend on public lands was classified as 41 percent in an upward trend, 55 percent in a static trend, and 4 percent in a downward trend. (USDI, BLM 1995 - *National Range Inventory Report*). These conditions are reflected in the MLRA descriptions above. In addition, these conditions are indicative of, at least in part, ongoing BLM livestock and vegetation management efforts. McCormick and Galt (1993) found, in analysis of vegetation condition and trend studies conducted within the BLMs Las Cruces Field Office and repeated every 10 years since the 1950s, that both ecological condition and trend have steadily increased since then. Their data showed that perennial plant cover increased from 14 percent to 35 percent, bare ground decreased from 72 percent to 24 percent, and litter increased from 15 percent to 28 percent. In addition, 58 percent of the study sites improved one or more range condition classes. Thirty-nine percent of the study sites showed no change in range condition, and of these, half were in fair and half were in good condition. During the same time period total livestock numbers increased by 22 percent within the six counties encompassed by the Field Office. The improvement to can be attributed to management activities and increased precipitation in recent years.

BLM range management activities are primarily directed at manipulation of cattle stocking rates and construction of range improvements such as fencing and water developments to better distribute grazing pressure. In addition, BLM undertakes direct vegetation manipulation projects (primarily using herbicides) to restore grasslands that have been dominated by shrub species. For example, the average annual management activities of the BLM New Mexico Rangeland Management Program in a four year period from fiscal year 1989 to fiscal year 1992 included: 20,500 acres of brush control, 100 acres of seedings, 300 acres of soil stabilization, 6 water detention/diversion structures containing a total of 3,200 cubic yards, 45 pipelines totaling 52 miles in length, 15 reservoirs totalling 18,556 cubic yards of storage, 3 spring developments, 1 water catchment storing 20,000 gallons of rain water, 8 wells, 45,135 gallons of water storage and drinking facilities, and 71 miles of fence (USDI, BLM 1989, 1990, 1991, 1992 - *Public Land Statistics*) Table 3-3 depicts the existing distribution of vegetation management effort by MLRA. It shows that most of the management effort on public lands is directed at MLRAs 36, 42, and 70. These MLRAs encompass 78 percent of the public land acreage in New Mexico, but also contain the bulk of the desert areas of New Mexico where a large amount of the early- and mid-seral vegetation occurs.

Riparian Vegetation

Riparian areas on public land in New Mexico are generally characterized by low- and mid- elevation riparian broad-leaf deciduous forest types. Various cottonwood and willow species characterize the overstory in areas where the riparian vegetative community is in relatively good condition. Various grasses, and grass-like plants (sedges, bullrush, scouring rush) compose the understory. Manageability of these areas is high, and successful, fast results can be expected from riparian management activities. BLM estimates that 19,600 acres of public land are occupied by saltcedar (BLM, Western Weed Team Memorandum, 1997). In areas where saltcedar dominates, manageability is low. Saltcedar is difficult and expensive to remove, due to the need for removal by hand or by use of heavy equipment, followed by the use of herbicides and then planting of native tree species.

Most running water (lotic) riparian systems occurring on public land within New Mexico have been inventoried consistent with BLM procedures for rating riparian functional condition (USDI, BLM 1995). However, lakes, ponds, and playas (lentic wetland systems) have not all been inventoried. Riparian condition is rated as one of four categories: proper functioning condition, functioning at risk, nonfunctional, or not determined (see the Glossary for full definitions of these terms). Under this rating system it should be noted that a stream reach can reach proper functioning condition at a mid-seral ecologic state, long before reaching late seral or climax condition.

When inventoried, each spring or stream is divided into segments or reaches that have similar physical and biologic characteristics. For example a steep, narrow boulder strewn reach with New Mexico alders is separated from a wide, meandering gravelly reach with Goodding willows and cottonwoods. Functional condition of each segment is rated (based upon physical and biologic factors existing in that particular segment) against the management capability of that segment on a standardized score card. Condition is not rated totally against biotic potential or climax vegetation. In many cases, management problems occurring upstream or on uplands on other than public land limit the manageability of a particular segment. These factors are taken into account when a segment is rated. With regard to this situation, BLM commonly manages only a very small percentage of a given stream and its upland watershed.

Based on existing inventory data, lotic riparian areas on public land in New Mexico total 427 miles, containing 13,285 acres of riparian habitat located in 244 stream segments (Table 3-4). Statewide, is 38 stream segments are in proper functioning condition, 116 segments are functional at risk, 38 segments are not functional, and 52 have not been inventoried. Of the total areas, 160 segments are grazed and 84 segments are excluded from grazing. Of the grazed areas, 14 are in proper functioning condition, 85 are functional at risk, 31 are not functional, and 30 have not been inventoried. Of the excluded areas, 24 are in proper functioning condition, 31 are functional at risk, 7 are not functional, and 22 have not been inventoried. Table 3-5 depicts the current functional condition rating of riparian segments currently not meeting the standards for each alternative. The following assumptions were made to determine which areas currently don't meet the proposed and alternative standards:

> RAC and County Alternatives - Areas in Not Functional condition and Functional At Risk condition with a Not Apparent or Downward trend do not meet the proposed Standards.
>
> No Action and Fallback Alternatives - Areas in Not Functional condition and Functional At Risk condition do not meet the proposed Standards.

As with upland vegetation management activities, BLM has been steadily working on improving riparian conditions. While much work is yet to be done, BLM is implementing 62 Activity Plans (on-the-ground management plans) with specific riparian management objectives. Projects implemented through these plans include projects such as construction of livestock exclusion fences (107 miles of stream on public land have been excluded from grazing to date), grazing management adjustments (in most FOs),

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TABLE 3-3
STANDARDS AND GUIDELINES - NUMBERS OF ALLOTMENT MANAGEMENT PLANS (AMPS) (AND OTHER APPLICABLE ALLOTMENT ACTIVITY PLANS) AND OF BRUSH CONTROL PROJECTS SINCE 1987 BY MLRA.

MLRA NAME	MLRA CODE	FARMINGTON		ALBUQUERQUE		TAOS		ROSWELL		CARLSBAD		SOCORRO		LAS CRUCES		TOTALS	
		AMP	BRUSH CNTL	AMPS	BRUSH CNTL	AMPS	BRUSH CNTL	AMPS	BRUSH CNTL	AMPS	BRUSH CNTL	AMPS	BRUSH CNTL	AMPS	BRUSH CNTL	AMPS	BRUSH CNTL
NEW MEXICO AND ARIZONA PLATEAUS AND MESAS	36	7	22	7	27	8	3					26	2	6	0	54	54
SAN JUAN RIVER VALLEY MESAS AND PLATEAUS	37	9	33													9	33
ARIZONA AND NEW MEXICO MTNS	39													1	0	1	0
SOUTHEASTERN ARIZONA BASIN AND RANGE	41													1	1	1	1
SOUTHERN DESERT BASINS, PLAINS, AND MTNS	42							42	17	19	36	23	17	52	41	135	111
SOUTHERN ROCKY MTNS	48A					3	0									3	0
HIGH INTERMOUNTAIN VALLEYS	51					19	7									19	7
PECOS-CANADIAN PLAINS AND VALLEYS	70							28	14	8	6	3	1	9	5	48	26
SOUTHERN HIGH PLAINS	77															0	0
TOTAL		16	55	7	27	30	10	70	31	27	42	52	20	69	47	271	232

SOURCE: UNPUBLISHED BLM FIELD OFFICE RECORDS (NOTE: NUMBERS OF PLANS INCLUDE ANY NRCS THAT ARE IN EFFECT ON PUBLIC LAND.)

Table 3-4
Riparian Conditions by Grazing Status

CONDITION RATING	GRAZING STATUS	MILES	ACRES	NUMBER OF RIPARIAN SEGMENTS
PROPER FUNCTIONING CONDITION	EXCLUDED	106	2730	24
FUNCTIONAL AT RISK	EXCLUDED	47	949	31
NOT FUNCTIONAL	EXCLUDED	21	513	7
NOT DETERMINED	EXCLUDED	9	390	22
TOTAL EXCLUDED		**183**	**4542**	**84**
PROPER FUNCTIONING CONDITION	GRAZED	9	151	14
FUNCTIONAL AT RISK	GRAZED	156	6661	85
NOT FUNCTIONAL	GRAZED	71	1743	31
NOT DETERMINED	GRAZED	8	188	30
TOTAL GRAZED		**244**	**8743**	**160**
GRAND TOTAL		**427**	**13285**	**244**

Source: New Mexico BLM Riparian Database. Data obtained from BLM Functional Condition Inventories.

TABLE 3-5
EXISTING RIPARIAN CONDITION FOR SEGMENTS NOT MEETING THE STANDARDS FOR EACH ALTERNATIVE.

ALTERNATIVE	CONDITION	NUMBER OF AREAS
NO ACTION	AREAS IN NOT FUNCTIONAL CONDITION AND FUNCTIONAL AT RISK CONDITION THAT DO NOT MEET THE STANDARDS FOR THIS ALTERNATIVE.	154
RAC	AREAS IN NOT FUNCTIONAL CONDITION AND FUNCTIONAL AT RISK CONDITION WITH A NOT APPARENT OR DOWNWARD TREND THAT DO NOT MEET THE STANDARDS FOR THIS ALTERNATIVE.	112
COUNTY	AREAS IN NOT FUNCTIONAL CONDITION AND FUNCTIONAL AT RISK CONDITION WITH A NOT APPARENT OR DOWNWARD TREND THAT DO NOT MEET THE STANDARDS FOR THIS ALTERNATIVE.	112
FALLBACK	AREAS IN NOT FUNCTIONAL CONDITION AND FUNCTIONAL AT RISK CONDITION THAT DO NOT MEET THE STANDARDS FOR THIS ALTERNATIVE.	154

Source: Analysis of data derived from New Mexico BLM Riparian Database

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riparian tree plantings in many FOs, fisheries work (particularly in the Taos FO portions of the Rio Grande), and saltcedar removal by hand and approved chemical treatments. A few multi-land owner efforts to improve watersheds and riparian areas are currently underway, such as the current efforts on the Rio Puerco in the Albuquerque FO and Laborcita Canyon in the Las Cruces FO.

Grazing systems have been devised that maintain or improve riparian health. For example, conservative grazing during the winter can provide some livestock use without damaging growing plants and avoiding heavy concentrations of livestock in the riparian area. However, riparian areas that are adversely affected, at least in part, by ongoing grazing are of continuing concern in managing public lands. BLM grazing is not the only problem affecting public land riparian areas. Because of the scattered pattern of public land riparian parcels, a great many other non-BLM related factors affect them, including mineral developments, non-BLM grazing, recreation activities, watershed problems on other lands, urban areas, channelization, and water diversions. Saltcedar infestations both on and off public lands also are major impediments to achieving proper functioning condition. Regardless of the problem or solution in a particular area, past experience has shown that improvement of public land riparian areas best occurs through multi-land owner cooperative efforts on entire watersheds.

SOILS

Most of the public lands in New Mexico are in a semi-arid environment with a range in parent material and vegetation that allows a wide variety of soils to develop. This variety affects the use and management of the public lands. Soil types on the public lands vary in depth, texture, color, structure, rock content, pH, nutrient status, water holding capacity, and other characteristics. Soil properties influence and, in some instances, control the amount and kinds of vegetation or land use. Soil variation is often dramatic, changing over short distances, whether on forest, woodland, grassland, or riparian soil types. Upland soils are generally less resilient to impacts and slower to respond to management than are soils within riparian and wetland areas.

The NRCS has divided New Mexico into nine geographic areas (MLRAs) based on patterns of soil, climate, water resources, and land uses. Soil descriptions for each MLRA utilize the soil taxonomy to identify broad groups of soils. At the broadest or highest taxonomic grouping are soil orders. Four of the 11 soil orders, Alfisols, Aridisols, Entisols, and Mollisols, compose the majority of soils in New Mexico.

Alfisols are mineral soils that develop in cool moist regions, often under woodland and forest cover, and have a significant accumulation of clay in the subsurface. They are capable of storing and providing more moisture and nutrients for plants than less developed soils or soils at lower elevations. Alfisols are generally productive soils that respond well to changes in management. Alfisols are major components in MLRAs 39, 48A, and 77. Subdivisions of Alfisols in these MLRAs include Eutroboralfs, Cryoboralfs, Haplustalfs, and Paleustalfs.

Aridisols are mineral soils that have developed in dry regions. They are light colored; low in organic matter; and may have accumulations of sodium, soluble salts, and lime. Aridisols are common in the desert shrub, sagebrush, and piñon juniper vegetation communities. Without irrigation, Aridisols are not as productive as those that receive more precipitation and as such, they are slower to respond to changes in management. Aridisols are major components in MLRAs 36, 37, 39 (low elevation), 41, 42, 51, and 70. Subdivisions of Aridisols in these MLRAs include Haplargids, Calciorthids, Camborthids, Paleargids, Paliorthids, Gypsiorthids, and Natrargids.

Entisols are mineral soils that lack profile development (soil horizons) and are often called young soils. Entisols are formed in recently deposited material that typically is coarse textured and low in nutrients. They are often found in lower elevations, and arid and semiarid environments supporting desert shrub and sagebrush communities. However, they do occur in all MLRAs, especially along existing stream channels and floodplains. They generally respond slowly to changes in management. Entisols are major components in MLRAs 36, 37, 39, 41, 42, and 48A. Subdivisions of Entisols in these MLRAs include Torriorthents, Torrifluvents, Ustifluvents, Torrispamments, Ustorthents, and Cryorthents.

Mollisols are mineral soils that have thick, dark-colored surface horizons rich in organic matter. They are fertile and extend from the higher mountains to the prairie grasslands where they are most abundant. Mollisol soils support the plains grasslands, chapparral-mountain shrub, mountain and plateau grasslands, and coniferous-

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deciduous forest community types. Mollisols are the most productive soils and respond well to management changes. Mollisols are major components in MLRAs 39, 41, 48A, 70, and 77. Subdivisions of Mollisols in these MLRAs include Argiborolls, Cryborolls, Haplustolls, Argiustolls, Calciustolls, and Paleustalls.

Soil Erosion

Soil erosion is influenced by climate, topography, soil properties, soil condition, cover, and land use. Of all the factors, soil cover is most important (*USDI, BLM 1994 Rangeland Reform Draft EIS*). Cover and land use are the two factors that BLM can influence to control erosion. Cover intercepts precipitation, reducing raindrop impact, restricting overland flow, and allowing more infiltration and less runoff and erosion. Research indicates that cover values of 30 to 40 percent are the lowest needed to control sheet and rill erosion and that 20 percent is needed to prevent wind erosion *(USDI, BLM 1994 Rangeland Reform Draft EIS)*. The 30 to 40 percent minimum cover values are more pertinent to arid areas where cover is naturally sparse. Cover values of 85 percent are not uncommon in the plains grasslands (*USDI, BLM 1994 Rangeland Reform Draft EIS)*. Sufficient cover requires adequate vegetation (basal cover and foliar cover) and natural litter.

Natural litter is the uppermost sightly decayed layer of organic matter on the soil surface. It not only adds soil cover but it also adds to the overall soil health by improving soil structure, thus improving the ability of the soil to absorb water. Litter also supplies nutrients to the soil.

Rangelands are affected by all three types of water erosion - sheet-rill, gully, and streambank. Sheet-rill erosion is insidious because it generally goes unnoticed as it removes very small amounts of soil over broad areas. Conversely, gully and streambank erosion are far more noticeable. Many uplands, especially in the arid areas, have an arroyo (gully) network inscribed throughout, replacing what were once grass-covered swales. As a result, water flow patterns in arid areas have been altered, causing an increase in size and frequency of runoff events and sediment yield to local water sources. Arroyos lower water tables and alter soil moisture regimes over large areas. Some researchers have concluded that 75 percent of the erosion in desert systems is the result of arroyo and streambank erosion *(USDI, BLM, 1994 Rangeland reform EIS)*.

Arroyo evolution begins with initial headcutting, then passes into a down-cutting phase, followed by channel widening and then infilling and rebuilding the floodplain. "Data from several streams in New Mexico and the southwest show decreasing sediment yields without changing flows. The lower reaches of these streams show evidence of renewed floodplain building within the arroyo walls." (Gellis 1991.)

WATER

The State of New Mexico estimates that New Mexico has approximately 117,000 miles of watercourses, of which 6,000 miles are perennial (New Mexico Water Quality Control Commission, [NMWQCC] 1998). Comparatively, the number of miles of perennial streams on public lands is small, only 433 (*USDI, BLM 1997 Public Land Statistics*). There are no estimates of the miles of ephemeral channels on public lands.

The following water discussion is summarized from NMWQCC 1998.

Surface waters in NM include headwaters of three principal drainages of the U.S.: the San Juan and Colorado River Basins contribute to the Colorado River; the Arkansas-White-Red River Basins contributes to the Mississippi River; and the Rio Grande and Pecos River Basins contribute to the Gulf of Mexico. There are also streams which are within closed basins and drain internally.

Total annual streamflow in new NM is over 5.7 million acre-feet, with precipitation within NM providing 3.3 million acre-feet. The remainder of the flow is primarily inflow from Colorado.

Quality of surface water varies within the state. Water from the high mountains is generally excellent quality. As the water flows downstream many factors contribute to degradation of the water quality. These factors include evapotranspiration, evaporation, pollution loading from man's activities, and changes due to beneficial uses. Some basins are well known for their water quality problems, such as the San Juan with the high salt content in the rocks and soils, or the Rio Puerco Basin with its fine textured valley fills that are high sediment producers.

The following hydrogeology discussion is summarized from NMWQCC 1998.

The hydrogeology of NM is also variable and complex, thus quality and quantity of ground water varies by location. Sandstone, limestone, and unconsolidated sand and gravel (sedimentary deposits) are the most productive aquifers.

Valley or basin fill are the most important aquifers in the state, especially for drinking water, and usually occur along drainageways. These aquifers are highly vulnerable to contamination from surface discharges because they are shallow (NMWQCC 1998). Maintenance of surface water quality is necessary to protect the ground water.

Water quality management in New Mexico has both state and federal aspects. The state, through the NMWQCC and New Mexico Environment Department (NMED), establishes standards for ground water, lakes, and streams or segments of streams, assesses the quality of these water bodies, adopts regulations, and takes actions to protect and maintain water quality. The state also coordinates with the U.S. Environmental Protection Agency in implementing the Federal Water Pollution Control Act (33 U.S.C. 1288), popularly known as the Clean Water Act and other federal acts which contain water quality protection provisions.

"Over 3,337 assessed river miles [in the state] have impaired designated or attainable uses. Many of the stream reaches have more than one impaired use. Use impairment is frequently due to several causal agents from several sources. Overall, twelve of the state's fourteen designated uses have been impaired by point or nonpoint sources of pollutants. All subcategories of both the coldwater and warmwater fishery uses, as well as the irrigation and irrigation storage, primary and secondary contact recreation, domestic water supply, fish culture, and livestock and wildlife watering uses have been impaired" (NMWQCC 1998).

Programs and measures to control pollution in New Mexico include the federal National Pollutant Discharge Elimination program for point source discharges and the state certification process for permits issued under this program, state certification of federal dredge-and-fill permits, discharge plans required under the state ground water regulations, state review of federal actions under the consistency provisions of the federal Clean Water Act, and agreements between NMED and federal and other agencies to implement nonpoint source (NPS) pollution control measures.

According to NMWQCC (1998), NPS pollution is from sources including recreation, hydromodification (dams, etc.), resource extraction, construction, silviculture, and agriculture is responsible for more than 96 percent of the impairment to the state's surface water. Of these sources, grazing on rangelands accounts for 29.5 percent of the total NPS contribution to surface water quality impairments of the state. Grazing is a probable major source of pollutants which may contribute to water quality impairments on approximately 2,474 stream miles, and a minor source of pollutants which may contribute to water quality impairments on approximately 676 stream miles.

Undoubtedly, many of the 448 miles of perennial streams on public lands have been impacted by grazing in the past. Of the 163 water quality-limited stream reaches identified by NMED (1998), approximately 46 have public lands within their watershed. Forty-two of these (91 percent) have grazing identified as one of the probable sources of pollutants.

Water quality can be improved. For example, riparian areas with lush vegetation contribute to improved water quality and removal of sediment as the water moves through, rebuilding floodplains and reducing erosion of streambanks. Riparian areas also act as a sponge to hold water in streambanks and release water slowly, increasing the amount of water available year-long.

Under the Clean Water Act and a Memorandum of Understanding with the NMED, BLM is the designated agency for water quality management on public lands and is responsible for the control and reduction of NPS pollution on these lands. NPS pollution is directly related to land use practices, and sediment is the principle pollutant from public land activities (NMWQCC, 1998). One of the key tools in reducing NPS pollution is the identification and application of best management practices (BMPs) to every activity with the potential to impact water quality. BMPs should be the best combination of structural and nonstructural measures working together to reduce or prevent water quality impairment.

It is BLM policy that project planning and implementation include site-specific BMPs to address NPS pollution concerns. This effort is coordinated with the State of New Mexico NPS Management Program outlined in (NMWQCC 1998). Examples of BMPs that have been used on public lands include the following:

- **Grazing** - grazing plans and systems, reducing livestock, redistributing livestock (fences, wells, salting, etc.), modifying grazing seasons, using rangeland treatments to improve condition (brush control, seeding, etc.) and modifying treatments to reduce soil disturbance

- **Roads and Rights-of-Way** - Minimizing soil disturbance, rerouting to avoid streams, stream armoring, stream crossings, controlling runon and runoff, and designing structures to withstand storms.

- **Recreation** - road closures, providing sanitary facilities

- **Riparian** - protecting areas, controlling saltcedar, plantings of desirable species

- **Oil and Gas** - closing and remediating pits, reseeding areas, building erosion control dams or berms, and avoiding leasing in sensitive areas

While the BMP terminology is relatively new, the concept is not. Nearly 50 years ago, BLM and other federal agencies began restoring western landscapes, as demonstrated by the efforts undertaken since the 1950s in the Rio Puerco watershed to control erosion and sedimentation through reseeding of depleted rangelands and construction of hundreds of erosion control dams, as well as adjustments to grazing management practices (*Rio Puerco Special Project Evaluation Report, 1972*).

GRAZING ADMINISTRATION

The current Rangeland Management Program can be more easily understood with some historical background of how it has developed, both successfully and with some setbacks, over the past century.

Rangelands were significantly changed around the turn of the century. Many areas that were previously grasslands were converted to brush lands. In the south, creosote and mesquite came to dominate the landscape while in the north, sagebrush and piñon/juniper trees became most common. "The explanations for vegetation change seem to be as numerous as the explainers themselves. Recent workers tend to view vegetation change as the result of several, factors, none of which can always be singled out as the most influential. Clearly, [historic] livestock grazing'...must bear justly the responsibility of a number of evils, but it has become a convenient scapegoat for a multitude of situations where the proper answer should be 'Nobody knows'"(Allred 1996).

Prior to 1934, the federal government did not control livestock grazing on public land. In 1934 the Taylor Grazing Act (TGA) was signed. It sought "to stop injury to the public grazing lands by preventing overgrazing and soil deterioration: to provide for their orderly use, improvement, and development; [and] to stabilize the livestock industry dependent upon the public range" (TGA 1934).

In the 1930s and 1940s the Division of Grazing, later the Grazing Service, later BLM, worked through the grazing advisory board, to identify where the public lands were, what had been the prior use by ranchers, what the range conditions were, and where range improvements were needed. Through this consultation, the Division was able to establish future grazing allotment boundaries, seasons of use, types of livestock and preference. Preference was identified in AUMs and was attached to base properties controlled by the various permittees/lessees. Permits and leases were then developed in concert with the preference, allotment boundaries, season of use, and kind of livestock. Where the land could not support the preference levels of use, a portion of the preference was placed in suspended nonuse and the permit or lease reflected the remaining portion as active use.

In the 1950s there was a significant drought. In New Mexico, the drought was perhaps second only to one that had occurred nearly 700 years earlier from 1275 to 1299. Many acres of grassland were thinned. Black grama losses were reported as high as 30 percent on conservatively grazed areas to 100 percent on ungrazed areas. In addition to the grass, shrubs and trees were lost (Allred 1996).

In the 1950s and 1960s the BLM worked to construct range improvements and treated the land to reduce erosion and help the land recover. In the mid-1960s BLM added grazing programs that would improve the range condition.

In the 1960s and 1970s large sagebrush and pinon-juniper chainings were completed in the northwestern part of the state to improve watershed conditions, wildlife habitat, and livestock forage. Slash piles were burned, and the chained areas often seeded to perennial grasses.

In the 1970s, the BLM began preparing EIS as part of the Rangeland Management Program. This usually included conducting rangeland surveys to project grazing capacity. Once the capacities were estimated and the EISs complete, the BLM started making livestock grazing adjustments.

In the 1980s, the BLM began using multiple-year monitoring to confirm or adjust grazing capacities. Usually an allotment was monitored for five-years and then the studies were evaluated. After evaluation, the allotment's capacity was adjusted to be consistent with the monitoring. In some cases the capacity was adjusted upward and in some cases it was adjusted downward. In most cases, the adjustments were incorporated through agreement between the permittee and BLM. In some cases, allotment plans were developed to incorporate land treatment and/or more intensive grazing management to achieve the management objectives.

In 1986 the *Public Land Statistics* reported that the following range conditions were present in New Mexico:

Excellent	1 percent
Good	24 percent
Fair	48 percent
Poor	23 percent
Unclassified	4 percent

By the 1990s, the BLM had ensured that most of the allotment stocking rates consistent with the grazing capacities established by rangeland monitoring or surveys. There were exceptions, however; these often included low priority allotments such as small scattered tracts. Often, BLM does not regulate the actual grazing numbers on these tracts unless there are unusual circumstances.

By 1995, the BLM reported that only 4 percent of public lands in New Mexico showed a downward trend. (USDI, BLM 1995 - *National Range Inventory Report*) A combination of factors may have been responsible for the downward trend. First of all, many brush and tree species continued to increase. The loss of the fire cycle also appeared to be a major contributor. Although it may have been in part due to grazing animals removing the fine fuels, a major contributor was the BLM's past fire control program (Swetnam and Betancourt 1990).

In other cases, the problem may have been animal concentration. Some areas (due to topography, water, or vegetation) appeal to animals more than others. Although an allotment may be stocked properly, concentration areas continue to be grazed above optimum levels. The BLM is now focusing on solving these problems. For example, BLM's first priority is to ensure that riparian areas are properly functioning and management is not adversely affecting them.

Forty one percent of Public lands were showing an upward trend by 1995. (USDI, BLM 1995 - *National Range Inventory Report*) These acres may not meet the optimum condition today; however, current management practices will allow the land to achieve the objectives.

Fifty-five percent of public lands were showing a static trend by 1995 (USDI, BLM 1995 - *National Range Inventory Report*), meaning that the current condition has stabilized. This condition often exists where optimum conditions have been achieved, where the land is dominated by brush species, and at the lower seral stages. Where deep rooted brush species dominate, change comes very slowly, even under optimum management programs, unless the programs include brush and tree control. To improve these lands, BLM cooperates with individual ranchers to develop rangeland programs that include improved grazing distribution, grazing deferment, and brush control. Success has been made in thinning sagebrush with the herbicide Spike 20-P in northern New Mexico. As sagebrush was thinned there was increased herbaceous vegetation production resulting in increased ground cover. This increased production and ground cover resulted in watershed protection and erosion reduction as well as wildlife and livestock forage benefits.

By 1996, the BLM changed its range condition reporting categories; however, a direct comparison can be made between the new and old categories. The following figures that were reported in the *Public Land Statistics* 1996 show a rapid improvement since 1986:

PNC (excellent)	1 percent
Late Seral (good)	35 percent
Mid Seral (fair)	46 percent
Early Seral (poor)	14 percent
Unclassified	3 percent

(* Total does not equal 100 percent due to rounding)

Although percentages of the PNC and mid-seral ecological stages remained virtually unchanged, the late seral increased by 45.8 percent and early seral was reduced by 39.1 percent. The PNC condition is not always the desired condition for the public lands, since it may not always provide the best mix of vegetation for desired biological and social values (Council of Agriculture Science and Technology 1996). Maximum vegetation diversity, often the most desirable objective for livestock and some species of wildlife, occurs frequently not at climax, but in the mid-to late seral stages (USDI, BLM, 1990-*State of the Public Rangelands*). This is because the mix of plants for use on the area may be suboptimal and other stages often provide for more diversity (Council of Agriculture Science and Technology, 1996).

Current Grazing Management

Today the BLM administers livestock grazing on federal land under the authority of Sections 3 and 15 of the TGA of 1934. Other laws governing livestock grazing on federal land include the Bankhead-Jones Farm and Tenant Act, National Environmental Policy Act NEPA, FLPMA and PRIA.

Livestock grazing is authorized through grazing permits and leases which are, typically, issued for a 10-year term. The permit identifies the grazing preference for base properties controlled by the permittee/lessee. The preference includes active use and suspended nonuse. For the active use, the permit/lease identifies the number and types of livestock and periods of use.

Suspended nonuse represents that portion of the preference that is held in suspense by BLM and cannot be activated by the permittee/lessee. Often the suspended preference is the result of BLM's monitoring program indicating that the grazing capacity of an allotment is not adequate to support full preference numbers.

Each year the permittee/lessee is provided the opportunity to apply for a portion of the active use to be in nonuse. The nonuse that is initiated by the permittee/lessee is different from suspended nonuse. When BLM approves the nonuse applied for by the livestock operator, the operator does not have to pay for the identified AUMs.

BLM records show that 1,891,665 active use AUMs of preference are currently attached to base properties for New Mexico. Of the 1,968,341 AUMs of preference, 76,676 AUMs are held in suspended nonuse. BLM records show that 1,891,665 AUMs of forage from the lands BLM administers are active or available for use. Preference, suspended nonuse, and active use are all reflected on the permits and/or leases.

In New Mexico, more than 2,000 operators are authorized to graze livestock on 2,193 allotments. Of these allotments, 1,321 have livestock grazing authorized by permits issued under Section 3. There are 872 grazing allotments where grazing is authorized by leases under Section 15 of the TGA. Allotments vary in size in regard to the number of active AUMs. The smallest allotment contains one 1 AUM, while the largest has 37,940 AUMs. The types of livestock authorized to graze on the public lands include cattle, horses, sheep, and goats. Sheep and goats can be found mostly in the Las Cruces, Carlsbad, Farmington, Albuquerque, Roswell and Taos Field Offices.

Seven FOs are responsible for administering the grazing regulations on public lands at the local level. (see Map 1-1 in Chapter 1) However, each office is distinct, varying in size, types of resource programs, budget, and personnel. These factors and others affect the intensity of management devoted to the public lands. The number of permits, leases and AUMs for each field office are shown in Table 3-6.

The laws mentioned above direct the BLM in its responsibility to authorize and manage livestock grazing

TABLE 3-6
NUMBER OF PERMITS AND LEASES AND AUMS BY FIELD OFFICE

	Total Preference AUMs	Active Use Preference AUMs	Suspended Preference AUMs	Section 3 Permits	Section 15 Leases
Carlsbad	402,185	367,717	34,468	200	62
Farmington	121,970	112,855	9,115	130	34
Las Cruces	638,975[1]	634,350	4,625	368	211
Albuquerque	146,294	145,272	1,022	112	135
Roswell	367,049	353,092	13,957	203	211
Socorro	238,472	233,359	5,113	204	56
Taos	53,396	45,020	8,376	104	163
Total	1,968,341	1,891,665	76,676	1321	872

1 Does not include AUMs of forage for McGregor Range.

use under the principles of multiple use and sustained yield, and to prevent the degradation of the rangeland resources by providing for their orderly use, improvement, and development. Early planning documents such as the Management Framework Plan (MFP) and grazing EIS's established resource objectives along with management actions needed to attain them. Valid MFP decisions and related information were later incorporated to support the BLM's present planning document, the RMP. Today, BLM combines the RMP and EIS to fulfill their commitment to implement a livestock grazing program that is in compliance with NEPA.

RMP/EIS documents have been written for each field office which is responsible for implementing its individual RMP decisions. (For a list of the various RMP's refer to Chapter 1.)

Allotment Classification

In the 1980s, BLM developed allotment classification criteria to assist individual field offices in identifying allotments with the highest priority for public investments. Allotments in the "Improve" category were the highest priority for management attention and range improvement investment.

Allotments were placed in one of three categories based on BLM criteria as shown below. The criteria for each category were numerous and seldom would an allotment meet all criteria for a category.

- "Maintain" (M) category
    - present range condition is satisfactory
    - allotments have a moderate or high resource production potential, and are producing near their potential (or trend is moving in that direction)
    - no serious resource-use conflicts/controversies exist
    - opportunities may exist for positive economic return from public investments
    - present management appears satisfactory
    - other local criteria
- "Improve" (I) category -
    - present range condition is unsatisfactory
    - allotments have a moderate or high resource production potential, and are producing at low to moderate levels
    - serious resource-use conflicts/controversy exist

  - opportunities exist for positive economic return from public investments
  - present management appears unsatisfactory
  - Other local criteria

- "Custodial" (C) category -
  - present range condition is not a factor
  - allotments have a low resource production potential, and are producing at low to moderate levels
  - limited resource-use conflicts/controversy may exist
  - opportunities for positive economic return on public investments do not exist or are constrained by technological or economic factors
  - opportunities exist to achieve the allotments potential through changes in management
  - other local criteria

Allotments within each category do not have to meet all the criteria to be managed according to the category objectives. Grazing allotments within New Mexico have been categorized as follows:

Category M	870 allotments	4,765,981 acres
Category I	561 allotments	6,747,894 acres
Category C	762 allotments	1,329,018 acres

The categorization of allotments has allowed BLM to direct attention to those areas where grazing management is needed most to improve the resource or resolve serious resource use conflicts.

Such a mechanism to resolve use conflicts has been needed, especially in view of the perception some individuals or groups have had toward livestock grazing. During the last decade, grazing by livestock on public land in the United States has come under increasing public scrutiny. Concerns are that such grazing has caused and is continuing to cause, among other things, diminished are biodiversity, deteriorated range condition, increased soil erosion, desertification, depleted watersheds and riparian areas, (e.g., banks of a river or other body of water), impoverished wildlife habitat, declining wildlife population, and decreased recreational opportunities and experiences Council of Agriculture Science and Technology 1996).

The grazing program is part of the BLM's overall multiple use management program for public lands. To authorize grazing use or grazing related actions, other uses of the lands or resource values (wildlife, wilderness, recreation, mining, etc.) are addressed only as they relate to, or may be affected by, livestock grazing use.

A variety of management actions or tools are available to properly manage grazing on public rangelands in accord with multiple use mandate. These include grazing systems, rangeland improvements and their proper placement, fire, salting, and others. Implementation of these actions, within each category, is conducted in conjunction with "careful and considered consultation, cooperation, and coordination with lessees, permittees, and landowners involved..." as required by Section 8 of (PRIA).

A useful tool for Rangeland Management has been the Allotment Management Plan (AMP), which is an action plan between the permittee and BLM, with input from the interested public. AMPs have been developed on 290 allotments, and also include those plans prepared by other agencies or plans developed by permittees. AMPs have helped BLM to be successful in resolving conflicting issues and meeting goals, by prescribing grazing use (grazing systems), rangeland improvements, and other actions, along with identifying specific objectives for grazing and objectives from other activity plans e.g., Habitat Management Plans. The BLM has expended much effort managing and improving the public rangelands; however, credit also must be given to many grazing permittees who, through their cooperation and good stewardship, have likewise contributed to the improvement of the public rangelands.

Grazing systems provide deferment or periodic rest of the rangeland from livestock grazing. When used with other techniques, they can successfully allow for plant growth and regrowth. Plants are affected more when grazed during their active growth, and especially so if they do not have the time to recover from defoliation before the end of the growing season. However, season-long use is not an inherently inappropriate management system. If all the proper tools are used to obtain a fairly uniform grazing distribution after range readiness and if the correct utilization level is reached, season-long grazing need to be neither destructive nor undesirable (Heady and Child 1994). When designing a grazing system, many factors must be considered, including the needs of the allotment, fencing, cost, stocking rate, water, salt, utilization level desired, and management objectives, among other considerations. Continuous grazing should not be discounted as long as objectives can be met. (Bedell, 1992)

Management Issues

A number of riparian areas exist around the state. Livestock grazing can be compatible. However, it depends on the extent to which grazing management considers and adapts to certain basic ecological relationships. Grazing management practices that improve or maintain the upland may not improve or maintain the riparian area. To be managed effectively, the whole pasture containing the riparian zone and the whole watershed is considered.

Plant species such as snakeweed, piñon-juniper, sagebrush, mesquite, and others affect the stability of soils and the productivity of rangelands, reducing the amount of forage available for livestock and wildlife. Through returns from livestock grazing fees, a total of 233 brush control or land treatment projects have been performed on thousands of acres to achieve a desired plant community. This has benefited both wildlife and livestock, as well as watershed and other resource values. For example, pronghorn antelope have been relocated to some of the land treatment areas to reintroduce or increase the population.

In considering other resource uses, fences have been modified in some areas so as not to obstruct the movement of deer and antelope. Fence design standards are available to meet a variety of resource management situations. RMP decisions in some Field Offices have directed the modification of some existing fences. The fences are modified by removing specific sections (100 to 200 feet) and replacing them with 4-or 5- strand wire.

The increasing number of elk in some areas is a concern. Elk compete with livestock for forage and have contributed to certain public lands being heavily grazed. Over 100,000 acres in some 20 allotments are affected by this problem. Unrestricted grazing by great numbers of wild ungulates (e.g., deer or elk), also can affect rangelands detrimentally (Chase 1986, Cole 1971)

WILD HORSES AND BURROS

The Wild Free Roaming Horse and Burro Act of 1971 requires wild horses and burros to be managed at appropriate levels and prohibits their relocation to areas where they had not lived before 1971. One of the act's goals is to manage populations to create an ecological balance on federal land.

A prerequisite for resource decisions and activities in the BLM is land use planning. For wild horses and burros, planning first addresses the question of whether a herd area is to be a Herd Management Area (HMA). A herd area is an area that was used by wild horses or burros as habitat in 1971 when the act was passed. A HMA is a herd area where the land use planning process has determined that wild horses or burros will be managed. In New Mexico, BLM has identified one HMA, the Bordo Atravesado HMA located 15 miles east of Socorro. The boundaries of the HMA are the same as those for the Bordo Atravesado grazing allotment. This 16,000 acre unit supports 273 head of cattle, a herd of about 50 wild horses and deer and pronghorn antelope.

An HMA Plan was developed for the area in 1980 and amended in 1985. The amendment reflected the new appropriate management level of 50 wild horses, an increase from the old level of 32.

The apparent range condition is fair to good within the wild horse HMA. Range studies indicate that the trend is static. This condition should be maintained so long as the appropriate management level is maintained and not exceeded.

When studies indicate an excessive use of forage, arrangements are made to remove a selected number of wild horses from the range. In 1995, monitoring indicated forage use of 46 to 54 percent. As a result, 29 wild horses were removed from the 71 head on the range.

Although there are problems encountered between livestock and wild horses, cattle usually do not pose a problem for the wild horses. The operator exercises control over his cattle and their movement from pasture to pasture. The entire herd (273 head) is periodically moved out of a pasture, providing it with deferment from cattle grazing, which benefits the wild horses.

Wild horses are also found within the Farmington Field Office. Some 85 to 100 run mostly on the Carson National Forest and occasionally on BLM lands. The area used by the wild horses is 80,000 acres in size - 75,000 acres of Forest Service land and 5,000 acres of BLM land. The Forest Service is the lead agency for managing the wild horses in this area, and with some assistance from the BLM, conducts population counts, monitoring, and gathering.

WILDLIFE

Big game animals are found throughout New Mexico on public lands. In addition to these animals, public lands provide habitat for other wildlife including a large number of mammals, birds, reptiles, fish, and amphibians. The BLM manages public lands to provide for wildlife habitat under the multiple use concept mandated by the FLPMA.

Some limiting factors potentially affecting wildlife populations are not within BLM's control. For example, although BLM has responsibility for management of the wildlife habitat, the animals themselves are often managed by other agencies. Additionally, natural events such as drought, fire, disease, and predation can severely reduce wildlife populations. When natural events such as a wet cycle occur, and habitat conditions are favorable for a certain species, then populations can increase dramatically, such as often happens with quail populations.

The combination of rancher-provided livestock water and BLM-provided water through the use of range improvement funds received from grazing fees, has improved wildlife habitat for a number of wildlife species dependent upon year-long water provided by pipelines and associated drinking troughs on most of the allotments within the state of New Mexico. The use of land treatments (prescribed fire, chemical, and mechanical) has improved wildlife habitat by reducing the amount of undesirable brush species; increasing ground cover and litter with grasses, shrubs, and forbs; and decreasing soil erosion. In some cases, increasing the number of range improvements may negatively affect wildlife habitat, by encouraging livestock use and disturbance of wildlife seclusion areas; for example, reduction of ground cover for ground nesting birds or disturbance to big game fawning and calving areas (Krausman 1996).

The following is a 30 year summary for selected big game species on public lands based on estimated numbers of big game animals (USDI, BLM 1966, 1976, 1986, 1989, 1996 - *Public Land Statistics*).

Antelope	**Year**	**Numbers**
	1947	9,251
	1956	7,085
	1966	7,500
	1976	8,700
	1986	4,700
	1996	7,320

Antelope numbers appear to be cyclic and to have bottomed out in the early 1980s. They are now almost back to the 1966 levels.

Mule Deer	**Year**	**Numbers**
	1947	18,300
	1956	12,570
	1966	43,000
	1976	37,000
	1986	28,700
	1996	31,000

The deer numbers appear to be decreasing on public lands. This is consistent with the statewide trend for the species. The reasons for this trend have not been positively identified by the New Mexico Department of Game and Fish.

Elk	**Year**	**Numbers**
	1947	0
	1956	0
	1966	170
	1976	1,100
	1986	1,700
	1996	6,000

Elk numbers have increased substantially on public lands and have become an issue within the state with livestock operators. The NMDGF has responsibility for managing elk, and has agreed to regulate wildlife populations on the public lands consistent with resource capability (Memorandum Of Understanding between NMDGF and BLM 1990). They are in the process of addressing the elk issue. Possible habitat degradation and the potential loss of livestock AUMs are issues of concern.

Public meetings for all regions within the state were conducted in the summer of 1997 to gather information and concerns on elk population levels and cooperatively establish goals and objectives. The NMDGF will control the elk population according to biological data and the outcome on issues from these meetings (personal comm. Dan Sutcliffe, NMDGF 1997).

Javelina	**Year**	**Numbers**
	1947	0
	1956	200
	1966	600
	1976	650
	1986	800
	1996	3,470

Javelina numbers are growing rapidly on public lands.

However, they do not appear to be causing resource damage and therefore have not created a concern.

Bighorn Sheep	Year	Numbers
	1947	67
	1956	0
	1966	30
	1976	44
	1986	60
	1996	170

Bighorn sheep numbers are increasing on public lands due to a joint recovery and transplanting program between BLM and NMDGF.

Bear	Year	Numbers
	1947	NA
	1956	NA
	1966	NA
	1976	0
	1986	0
	1996	181

Bear numbers appear to be increasing and dispersing in New Mexico. This has created a growing number on public lands.

Turkey	Year	Numbers
	1947	NA
	1956	NA
	1966	NA
	1976	NA
	1989	100
	1996	1,000

Turkey numbers are increasing on public lands.

Barbary Sheep	Year	Numbers
	1947	NA
	1956	NA
	1966	200
	1976	340
	1986	500
	1996	450

Barbary sheep are an introduced species brought to New Mexico in the 1960s by the NMDGF and private interests. Their numbers appear to have peaked in the 1980s.

Wildlife Habitat by MLRA

The following is a brief description of wildlife habitat in the nine MLRAs. The diverse, intermingled plant communities offer numerous habitats for a variety of wildlife species in each MLRA.

36 - New Mexico and Arizona Plateaus and Mesas

Most of this area supports grassland vegetation with large quantities of shrub species present, providing food and cover for wildlife. Piñon-juniper woodlands are located at the higher elevations and along escarpments.

Mule deer range throughout this MLRA. Populations are down, consistent with the trend for mule deer throughout New Mexico. Several factors are suspected for this recent decline such as predators, drought which leads to poor habitat quality and affects breeding and fawn survival, increased hunting pressure, and poaching on public lands.

Rocky Mountain elk reside on public land in the higher elevations of this MLRA and increase in numbers during the winter months. All herds seem to be increasing and expanding throughout their range and are competing with livestock for forage. Due to this increase in elk numbers, some upland and riparian habitats are being degraded, especially during severe winters. Black bear and mountain lion are scattered throughout the MLRA in the pinon-juniper woodland and escarpments, preying upon the dwindling deer herds and other prey-base species. Other mammals such as bobcat, coyote, gray fox, tassel-eared squirrel, black-tailed jack rabbit, desert cottontail, deer mouse, brush mouse, Townsend's ground squirrel, and white-tailed prairie dog can be found throughout the MLRA.

Merriam's turkey use this MLRA, as well as the Ignacio Chavez Wildlife Special Management Area in the Albuquerque Field Office. Scaled quail, Gambel's quail, and mourning dove are the primary game birds within the MLRA. Several areas within the MLRA have been identified as wildlife areas of special management concern for raptors such as nesting sites, feeding areas, and seasonal habitat needs. The golden eagle, prairie falcon, ferruginous hawk, and bald eagle are the primary raptors. Other raptor and avian species include burrowing owl, American kestrel, red-tailed hawk, sage thrasher, sage sparrow, black-billed magpie, gray flycatcher, horned lark, and several other passerine and song bird species.

Most common reptiles include the collared lizard, prairie lizard, eastern fence lizard, western whiptail, striped whipsnake, western garter snake, western rattlesnake, western ground snake, western skink, and common bullsnake.

37 - San Juan River Valley Mesas and Plateaus

This MLRA supports wildlife that use the sagebrush and desert shrub community of Northwestern New Mexico. In higher elevations some pinon-juniper and mountain mahogany along with western wheatgrass and galleta can be found. Sagebrush tends to be the dominant shrub species. These sagebrush areas contain less species diversity than other plant communities and are typically associated with the cold desert where snow and cold weather causes wildlife to use habitat areas in seasonal patterns (wintering areas). This habitat is considered a biotic zone between the high coniferous regions and the lower grassland areas. As a result, the sagebrush community can be used as a singular habitat type for some species or in conjunction with other vegetational habitats for migratory species.

Pronghorn antelope commonly live within the sagebrush community where sagebrush is lower than 24 inches tall and a variety of forbs and other forage occupy the stand. Within the Farmington Field Office, scattered small herds of pronghorn antelope can be found in sagebrush and desert shrub-grassland types. However, even though there are large areas of apparently suitable habitat, the population is estimated to be less than 100 animals and is considered to be declining, possibly due to poaching (Farmington RMP 1987). To take advantage of available habitat, about 85 antelope were released on Ensenada Mesa in March 1989.

Mule deer are residents relying upon browse for food and various topographic features for cover and escape routes. This area provides significant winter habitat for migrating deer and elk herds from the Carson and Santa Fe National Forests. Black bear and mountain lion are scattered throughout MLRA in the piñon-juniper woodland and rough canyons. Other mammals such as bobcat, coyote, gray fox, black-tailed jack rabbit, desert cottontail, deer mouse, brush mouse, Townsend's ground squirrel, and white-tailed prairie dog can be found throughout the MLRA.

Areas within the MLRA that have received special management attention in the Farmington Field Office are raptor nesting areas for golden eagle, prairie falcon, and ferruginous hawk; and bald eagle wintering areas. Other raptor and avian species include burrowing owl, American kestrel, red-tailed hawk, sage thrasher, sage sparrow, black-billed magpie, gray flycatcher, horned lark, and several other passerine species.

Most common reptiles include the sagebrush lizard, eastern fence lizard, western whiptail, garter snake, western rattlesnake, western ground snake, western skink, and common bullsnake.

39 - Arizona and New Mexico Mountains

This MLRA is covered with an extensive stand of ponderosa pine. Because of the broad elevation range, the area supports various habitats including alpine vegetation, conifer forests, oak woodlands, and grasses; resulting in large wildlife populations.

The BLM within the state of New Mexico manages very little habitat of this type. Mule deer live in coniferous and deciduous forests, preferring rough terrain for cover and shrubs for food. Elk utilize the higher country during the summer and migrate to lower elevations during the winter. Other mammals common to the forest are mountain lion, black bear, coyote, bobcat, golden mantled ground squirrel, Albert's squirrel, chipmunk, and porcupine.

Resident birds that use the forests include the pygmy nuthatch, Stellar's jay, mountain chickadee, Cassin's finch, northern flicker, western goshawk, red-tailed hawk, sharp-shinned hawk, Mexican spotted owl, and great-horned owl.

Common reptiles include the wandering garter snake, pine gopher snake, and western rattlesnake. The most common amphibians include the Rocky Mountain toad and common leopard frog.

The coniferous and deciduous forests continue to be used heavily for recreational purposes, causing wildlife displacement.

41 - Southeastern Arizona Basin and Range

This MLRA lies within the Coranado National Forest in Hidalgo County, with a small portion overlapping onto BLM lands. The area supports forest, savanna, and desert shrub vegetation.

Mule deer are scattered throughout the MLRA, and are most abundant in or near the various mountain ranges. Coues' whitetail deer occupy a limited range in southwestern New Mexico (Hidalgo County). The Coues' whitetail prefer the grass, mixed shrub, and conifer mountains, which are relatively undisturbed or are in or near the potential climax community. Javelina are scattered within the riparian areas, grasslands, and pinon-juniper woodlands of the MLRA. The larger concentrations exist in the southern portion of Hidalgo County.

Other mammals associated with this small MLRA include coyote, badger, black-tailed jackrabbit, black-tailed prairie dog, bannertail kangaroo rat, white-throated wood rat, and numerous smaller mammals.

Scaled quail, Gambel's quail, and mourning dove are the primary upland game bird species. Swainson's and ferruginous hawk, lesser nighthawk, Chihuahuan raven, verdin, cactus wren, pyrohuloxia, and McCown's longspur are just several other bird species that use the MLRA.

Reptiles and amphibians occurring within the MLRA include the southern prairie lizard, whiptail, western hog-nosed snake, Mexican black-headed snake, and massasauga, and green toad.

42 - Southern Desertic Basins, Plains, and Mountains

This MLRA makes up a large portion of south-central and southern New Mexico. This area supports desert grass-shrub vegetation with isolated piñon-juniper desert mountains intermingled. Many desert species are physiologically and morphologically adapted to survive extreme environmental conditions (low, erratic rainfall and highly variable temperatures). Many mammals do not require free water but depend upon their own metabolic water and water conservation strategies (nocturnal). Because of these extreme environmental conditions, desert wildlife are highly dependent upon microhabitats, especially those that provide water and thermal cover, such as vegetation patches, rock, soil, and surface debris (litter). Small changes in these microhabitats can alter species abundance and diversity.

With rapid expansion of human activities into desert habitats, many habitat components crucial to species existence are being altered, especially those important to humans and wildlife.

Desert habitats possess some of the most unusual wildlife within the state. Numerous wildlife species use or occupy the hot and dry Chihuahuan Desert shrub type of New Mexico. Desert mule deer are widespread throughout the area and rely upon various browse species for food and topographic features for cover and escape routes. Several small pronghorn antelope herds are found throughout the MLRA. Desert bighorn sheep are intensively managed in the southwestern portion of this MLRA. The bighorn population is less than 100 animals and has been fluctuating between 75 and 100 animals for the past several years (USDI, BLM Mimbres RMP 1993). Competition for feed with deer and livestock is a major concern in the bighorn sheep-occupied mountain ranges (USDI, BLM, Mimbres RMP 1993). Important food items include mountain mahogany, cactus, winterfat, oak, and some grasses and forbs. Disease and predation are other serious problems that are affecting the size and health of the bighorn sheep population.

Javelina use the desert floor west of the Sacramento Mountains where desert plant species such as prickly pear, agave, ocotillo, sotol and scattered junipers are more abundant. A herd of Iranian ibex, an exotic species, occupies the Florida Mountains south of Deming, New Mexico. Numerous releases occurred in the 1970s totaling 73 animals. In 1990, the population ranged from 400 to 500 animals, with a carrying capacity set in 1988 for 400 animals. Their diet primarily consists of mountain mahogany, silktassel, and oak. Oryx are located within the MLRA, primarily on military withdrawn lands. In recent years, they have moved onto BLM lands in the Las Cruces, Socorro, and Roswell Field Offices. There is some concern from permittees on the competition for forage between oryx and livestock and the destruction of fences from these large exotic mammals moving through the area (personal comm. Bill Stephenson 1994).

Barbary sheep (Audad) are scattered throughout the rolling hills and canyons. In the early 1980s, populations were high and competition with mule deer and range sheep for forage-primarily browse species-was occurring. Since then, Barbary sheep populations have dropped and are somewhat stable under the current hunting regulations.

Other mammals associated with this small MLRA include coyote, kit fox, spotted skunk, Merriam's kangaroo rat, rock squirrel, southern grasshopper mouse, and numerous other small mammals.

Scaled and Gambel's quail, and mourning and white winged dove are the primary upland gamebirds within the MLRA. Raptor species dependent upon topographic features or large brush species for nesting sites include the Harris hawk, prairie falcon, great-horned owl, burrowing owl, and American kestrel. Several avian species that use the southern desert include the common raven, thrasher, warbler, canyon towhee, and other passerine birds.

The southern desert provides a large diversity of reptiles and amphibians. Some of these include the side-blotched lizard, Clark's spiny lizard, lesser and greater earless lizard, desert iguana, Gila monster, sidewinder, and numerous other reptiles.

48 - Southern Rocky Mountains

This area supports forests on upper slopes, alpine tundra above timberline, and shrub-grass vegetation at lower elevations. Rocky Mountain elk are the primary big game animal occupying the area year-round. Mule deer are scattered throughout the area during the warmer seasons and migrate to lower elevations in the winter. Several transplants for Rocky Mountain bighorn sheep have been conducted in recent years and have been successful in the northern part of the Pecos wilderness and Wheeler Peak areas. Blue grouse use the lodgepole pine, spruce, and fir forests. Small isolated populations of Merriam's turkey occupy this MLRA and are usually associated with the ponderosa pine forest at lower elevations. Black bear, mountain lion, and other game species use the area on a year-round basis.

51 - High Intermountain Valleys

Wildlife species within this MLRA are generally common varieties due to the diversity of habitats. All of the land description lies within the Taos Field Office. Mule deer are scattered throughout the area with the habitat in relatively good condition. Rocky Mountain elk primarily reside in the northern portion of the unit; however, small resident populations occur on Pot Mountain, Cerro Montoso, Guadalupe Mountain, and West Picuris. The winter population increases as wintering elk migrate to the San Antonio/Pot Mountain Wildlife Habitat Area (WHA). It is not uncommon to see an additional 1,500 head of elk during a severe winter within the WHA. Pronghorn antelope habitat is extensive in the San Antonio/Pot Mountain WHA. The population is below optimum, but is increasing (850 animals) (Taos RMP 1988). Black bear and mountain lion occur in limited numbers in mountainous areas and along the Rio Grande Gorge. Other mammals associated with this MLRA include coyote, bobcat, ringtail cat, gray fox, black-tailed jackrabbit, white-tail prairie dog, spotted skunk, rock squirrel, northern grasshopper mouse, and numerous other small mammals and rodents.

Upland game birds include the mourning dove, scaled quail, Merriam's turkey, band-tailed pigeon, and blue grouse, none very common on public lands within the MLRA. The upper portions of the Rio Grande provide significant habitat for raptor nest sites. Some of these are sensitive to human presence, including the prairie falcon and golden eagle. Other raptors that use the deep rim-rock canyon and upland sites for prey include the great-horned owl, red-tailed hawk, and American kestrel.

70 - Pecos-Canadian Plains and Valleys

This MLRA supports wildlife species dependent on the plains grassland vegetation, which is dominated by short- and mid-grasses. However, there are some large areas of public land on the eastern boundary of the MLRA having significant amounts of tall grasses (bluestems) and shinnery oak. Within the Roswell Field Office, this area is known as the Mescalero Sands or Caprock WHA and encompasses approximately 570,00 acres of which 270,000 acres are of public domain. Another area north and west of Roswell known as the Macho WHA encompasses approximately 1,750,000 acres of which 634,000 acres are of federal domain.

Desert mule deer are scattered throughout the MLRA, especially near large concentrations of shrubs and brush, drainages, and the shinnery oak sandhills. Pronghorn antelope are the most common large herbivorous mammal in the open grasslands. Competition for space and forage occurs on sheep allotments within the Roswell and Carlsbad Field Offices, primarily within the Macho WHA for the pronghorn antelope, in search of forage and fawning areas, especially during drought periods (USDI, BLM 1986 - *Macho Habitat Management Plan, 1986*).

In southeastern New Mexico, the lesser prairie chicken is the primary upland game bird for which the BLM manages habitat. Prairie chickens are found almost exclusively in the shinnery-oak dune/tallgrass community and depend heavily on the residual growth of little and sand bluestem for nesting habitat. Over the past seven years the population has dropped considerably, not only in New Mexico but all over the occupied range. A petition for listing the species as threatened has been received by the U.S. Fish and Wildlife Service (USFWS). An interstate working group has be formed to address certain issues within the petition and its validity. The Roswell Field Office has also initiated a longterm study on the prairie chicken to determine habitat requirements and use areas and hopefully gain biological data that will be helpful in making sound management decisions.

Scaled and bobwhite quail, morning dove, and ring-necked pheasant are other upland game girds associated with this MLRA.

Numerous other birds use the grasslands due to the variety in grasses, forbs, and shrubs. The most common birds include the horned lark, killdeer, western meadowlark, vesper sparrow, pyrohuloxia, mockingbird, and loggerhead shrike. Raptors include the Harris, red-tailed, ferruginous, and Swainson's hawks; great-horned owl; burrowing owl; and American kestrel.

The warm prairie environment in this MLRA supports a large number of reptile species compared to higher elevations. The more common reptiles include the short-horned lizard, lesser earless lizard, eastern fence lizard, sanddune lizard (special status species), western box turtle, coachwhip, bullsnake, prairie rattlesnake, and western rattlesnake.

77-Southern High Plains

The majority of this MLRA is under private and state ownership.

Pronghorn antelope are the most common large herbivorous mammal in the open grasslands, but desert mule deer may be present near shrubs and brush associated with drainages and topography.

The largest predator on the grasslands is the coyote. Other carnivorous mammals include the kit fox, badger, and endangered black-footed ferret. The grasslands also support ground squirrel, prairie dog, pocket gopher, and pocket mice.

Birds are numerous within the grasslands due to the variety in grasses, forbs, and shrubs.

Reptiles are scattered throughout the MLRA, but due to climatic conditions and habitat, reptiles lack the diversity compared to the southern desert regions.

Riparian Habitat Areas

Riparian habitat is perhaps the most significant, yet smallest habitat type occurring on public lands within the state. Functioning riparian areas in all climatic regimes support a diverse array of plant communities providing a variety of food, cover, and water, and often contain special ecological features that are not often found in upland sites. Numerous wildlife species occupy or use riparian areas for forage, water, and nesting and denning sites.

Wildlife assemblages in riparian areas are characterized by large numbers of bird species, including waterfowl (such as geese, ducks and grebes), shorebirds (cranes, herons, egrets, rails, gulls), predators including owl and hawk species, woodpeckers, belted kingfishers, and songbirds (dippers, swallows, warblers, flycatchers, jays, and wrens). Migrating birds also use the areas as resting places in the spring and fall seasons.

Lowland riparian ecosystems harbor more species of reptiles and amphibians than do other ecosystems in the state due to warmer temperatures, abundant shelter, and large numbers of insects and other animals available for food. The more common reptiles and amphibians are tiger salamander, leopard frog, chorus frog, Great Plains toad, painted turtle, yellow mud turtle, water snake, garter snake, and bullsnake.

The quality of fisheries has a direct correlation to the health of the riparian community and the best opportunity for improving fisheries is to restore degraded riparian areas.

Special Status Species

For this EIS, informal Section 7 Consultation under the Endangered Species Act was initiated with the USFWS on October 23, 1996 (Appendix C-1). The USFWS responded with a list of species by county on November 8, 1996 (Appendix C-2). The list identifies 60 federally listed, proposed, and candidate species in New Mexico. The BLM has identified 40 of the 60 as potentially occurring on the public lands (Appendix C-3, Table A).

BLM policy requires that state listed and BLM sensitive species also be considered in BLM planning efforts. In addition to the USFWS list, this EIS also incorporates the BLM Sensitive Species List, animal species listed by the (NMDGF), and plant species listed by the New Mexico

Division of Forestry and Resource Survey as endangered or threatened. A total of 149 of the 202 species are likely to occur on public lands. These species are listed in Appendix C-3, Table B.

In order to evaluate of the habitat use and distribution characteristics of the species on the lists, several categories were developed, including a habitat description which was classified broadly as biome, and restricted distribution. Table 3-7 shows the number of special status species by biome (habitat type). Some species occurred in more than one category, and therefore the total of percentages do not add to 100.

Based on species listing, the wetland/riparian/aquatic and woodland habitats in New Mexico are the habitats of the most concern. This is in agreement with the New Mexico Gap Analysis Project (Thompson et al., 1996), which found that vertebrate species richness was greatest in riparian corridors, foothills, and mid-elevation mountainous areas.

Eighty-eight species (35 percent of them) exhibited a form of endemism or naturally restricted occurrence. For example, 34 species (13 percent) occur in the Bootheel Area of southern Hidalgo County. This area is influenced by the extension of the Sierra Madre ecosystem into the United States from Mexico in this area. In addition, species richness is generally higher in the southern desert and grassland MLRAs (MLRAs 41 and 42) than in the more northerly areas. This is roughly consistent with the habitat distribution of special status Species described above.

Federally listed species with local or regional concerns with regard to public land management were identified in the recent statewide formal Section 7 consultations. These include the southwestern willow flycatcher, with its proposed critical habitat (riparian habitats); Pecos bluntnose shiner with its designated critical habitat (aquatic habitat in the Pecos River); Pecos gambusia (aquatic habitat in Pecos River); spikedace (aquatic habitats in the Gila River); loachminnow (aquatic habitats in the Gila River); Razorback Sucker with its designated critical habitat (aquatic habitats in the San Juan River); Colorado River squawfish with its designated critical habitat (aquatic habitats in the San Juan River); and aplomado falcon (Chihuahuan Desert grasslands habitats in the Las Cruces Field Office); Mesa Verde cactus (Great Basin Desert); Sneed's pincushion cactus (Chihuahuan Desert); Zuni fleabane (Socorro Field Office); peregrine falcon (Caballo portion of the Las Cruces Field Office), Sacramento prickly poppy (Caballo portion of the Las Cruces Field Office); and least tern (aquatic/riparian/wetland habitats in the Roswell Field Office).

RMP Biological Opinions

Formal consultations were initiated in January 1996 to bring each of the eight RMPs into compliance with the requirements of Section 7 of the Endangered Species Act. Specifically, the consultations addressed the impacts of land use allocations in the RMPs on species that were listed as threatened endangered, that had not been consulted on previously. The consultations were concluded in May 1997 with Biological Opinions from the USFWS, which are summarized in Table 3-8. The USFWS issues Biological Opinions to determine whether an action will jeopardize the continued existence of a species - either a Jeopardy or Non-jeopardy determination is issued as the opinion. The following are included with a Biological Opinion:

- Reasonable and Prudent Alternatives - non-discretionary (required) actions applied to a Jeopardy determination. They are actions that can be implemented in a manner consistent with the intended purpose of the action, are within the legal authority of the agency, are economically and technologically feasible, and avoid the likelihood of jeopardizing the continued existence of a species or adverse modification of critical habitat.

- Incidental Take - an official permitting of taking (defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting a listed species) that is incidental to an agency action, but not a part of the action. An implementation of the action.

- Reasonable and Prudent Measures - binding on all permits and permittees engaging in activities covered by Incidental Take. Reasonable and Prudent Measures may also be applied without an Incidental Take statement.

- Conservation Recommendations - discretionary actions suggested by USFWS to minimize or avoid the adverse effects of an action. Implementation of Conservation

- Recommendations is discretionary by the agency.

TABLE 3-7
NUMBER OF SPECIAL STATUS SPECIES BY HABITAT TYPE (BIOMES)

HABITAT (BIOMES)	TOTAL ACRES OF PUBLIC LANDS	NUMBER OF SPECIES STATEWIDE	PERCENT OF SPECIES STATEWIDE	NUMBER OF SPECIES ON PUBLIC LAND	PERCENT OF SPECIES ON PUBLIC LANDS
WETLAND/ RIPARIAN/ AQUATIC	244 segments[1]	111	44	76	29
WOODLANDS	3,104,000	107	42	89	34
DESERT	4,453,000	56	22	55	21
CONIFER FOREST	13,000	54	21	31	12
GRASSLAND	5,668,000	48	19	40	15
TUNDRA	0	1	<1	0	0
UNKNOWN		1	<1	1	<1
TOTAL	13,495,000	262	100[2]	189	100[3]

Source: BLM Files

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[1] The 244 segments represents approximately 13,7000 acres.

[2] The total percent of species is more than 100% because many species occupy more than one habitat.

[3] The total percent of species is more than 100% because many species occupy more than one habitat.

TABLE 3-8
RMP BIOLOGICAL OPINIONS

	Reasonable and Prudent Alternatives	Incidental Take	Reasonable and Prudent Measures	Conservation Recommendations
Taos RMP, Taos Field Office				
Opinion: *Jeopardy for the southwestern willow flycatcher*				
Southwestern Willow Flycatcher	1. Develop a management plan for the flycatcher. 2. Allow no livestock grazing in occupied or potential habitat from April 15 to September 15. 3. Allow no new construction or expansion of campgrounds in occupied or potential habitat.	Two birds (one pair)	1. Reduce likelihood of cowbird parasitism. 2. Allow no modification of occupied or potential habitat.	1. Continue flycatcher surveys. 2. Summarize upland vegetation and soils trend data to aid in flycatcher management. 3. Assess the impacts of winter grazing on riparian vegetation. 4. Continue to exclude riparian areas from grazing and monitor vegetatio and soil responses. 5. Monitor recreation uses in flycatcher habitat. Assess the effectivenes management actions.
Rio Puerco RMP, Albuquerque Field Office				
Opinion: Non-jeopardy for the southwestern willow flycatcher				
Southwestern Willow Flycatcher	None	None	None	1. Continue flycatcher surveys. 2. Allow no grazing in potential habitat without completing Section 7 consultation. 3. Allow no habitat modification or vegetation manipulation in potential habitat. Complete a programmatic consultation on vegetation manipulatio 4. Summarize upland vegetation and soils trend data to aid in flycatcher management. 5. Develop a management plan for the flycatcher. 6. Assess the impacts of winter grazing on riparian vegetation. 7. Continue to exclude riparian areas from grazing and monitor vegetatio and soil responses.
White Sands RMP, Las Cruces Field Office				
Opinion: Non-jeopardy for the southwestern willow flycatcher, aplomado falcon, Sacramento prickly poppy, and peregrine falcon				
Oil and Gas Leasing	None	Not Applicable	None	1. Complete a programmatic Section 7 consultation on oil and gas leasing the field office.
Southwestern Willow Flycatcher	None	None	None	1. Continue surveys. 2. Complete a grazing/riparian management plan for Percha Creek. 3. Complete the RMP amendment designating the Three Rivers Petroglyp Area ACEC, and exclude the riparian area from grazing. 4. Monitor any flycatcher nests for success and cowbird parasitism. 5. Initiate a cowbird trapping program if nest parasitism exceeds 10 perce 6. Identify and survey any potential habitat on public land along the Rio Grande. 7. Identify and evaluate any livestock concentration areas adjacent to the Grande corridor. Manage these areas to minimize use by cowbirds.
Aplomado Falcon	None	None	1. Initiate a research project to determine the extent of habitat in the Caballo portion of the Las Cruces Field Office. 2. Compare the suitability of habitat and livestock management practices between potential habitat in Caballo and occupied habitat in Chihuahua, Mexico. 3. Within five years, evaluate research project data to determine the need for changes in management to facilitate recovery of the aplomado falcon.	None

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TABLE 3-8
RMP BIOLOGICAL OPINIONS

	Reasonable and Prudent Alternatives	Incidental Take	Reasonable and Prudent Measures	Conservation Recommendations
Sacramento Prickly Poppy	None	None	None	1. Complete the RMP amendment for expansion of the Sacramento Escarpment Area of Critical Environmental Concern (ACEC). 2. Monitor prickly poppy populations every three years.
Peregrine Falcon	None	None	1. Complete the RMP amendment for expansion of the Sacramento Escarpment ACEC. 2. Monitor historic or suitable habitat or consider habitat occupied in the absence of monitoring information. Reduce or eliminate any documented adverse impacts.	1. Develop a Site Management Plan for historical/suitable habitat. 2. Reduce disturbance within 1 mile of historic/suitable habitat. 3. Schedule management activities in accordance with Johnson 1994
Mimbres RMP, Las Cruces Field Office				
Opinion: Jeopardy for the southwestern willow flycatcher Non-jeopardy for the aplomado falcon, Sneed's pincushion cactus, loachminnow, and spikedace				
Southwestern Willow Flycatcher	1. Revise Mimbres RMP to eliminate grazing from the Gila Lower Box. 2. Initiate a cowbird trapping program if nest parasitism exceeds 10 percent. 3. Allow no livestock grazing in occupied or potential habitat from April 15 to September 15. Manage to improve potential habitat and maintain occupied habitat. Assess the effects of winter grazing on habitat suitability. 4. Develop a management plan for the flycatcher.	Two pair	1. Continue to survey habitat in the Gila River. Monitor nest success and nest parasitism for two seasons. 2. Determine whether public land livestock management activities contribute to cowbird populations within 5 miles of the Gila Lower Box, Rio Grande near Radium Springs, and other occupied nest sites as discovered. 3. Identify and survey any potential habitat on public land along the Rio Grande.	None
Aplomado Falcon	None	Indeterminate, indexed to habitat in Mexico and the results of the research project	1. Initiate a research project to determine the extent of habitat in the Mimbres portion of the Las Cruces Field Office. 2. Compare the suitability of habitat and livestock management practices between potential habitat in Mimbres and occupied habitat in Chihuahua, Mexico. 3. Within five years, evaluate research project data to determine the need for changes in management to facilitate recovery of the aplomado falcon.	None
Sneed's Pincushion Cactus	None	None	None	1. Complete the locatable mineral withdrawal for the Organ/Franklin Mountains Area of Critical Environmental Concern. 2. Issue guidance to include specific protective mitigation measures being used in the field for Sneed's pincushion cactus protection for locatable minerals exploration.
Loachminnow, Spikedace	None	Indeterminate, indexed to habitat trend	1. Manage grazing on 810 acres of uplands around the Gila Middle Box to minimize erosion impacts on the Gila River. 2. Manage public land watersheds of the Gila River to minimize erosion impacts on the Gila Middle Box. 3. Monitor spikedace and loachminnow populations and their habitats in the Gila Middle Box and Gila Lower Box to determine trend.	None
Socorro RMP, Socorro Field Office				
Opinion: Non-jeopardy for the Zuni fleabane and aplomado falcon				
Zuni Fleabane	None	None	None	1. Complete a mineral withdrawal on the Sawtooth ACEC.

TABLE 3-8
RMP BIOLOGICAL OPINIONS

	Reasonable and Prudent Alternatives	Incidental Take	Reasonable and Prudent Measures	Conservation Recommendations
Aplomado Falcon	None	None	None	1. Initiate a research project to determine the extent of habitat in the Socorro Field Office. 2. Rank potential habitat for suitability and reintroduction. Survey potential habitat for presence of aplomados for a minimum of two years. 3. Compare the suitability of habitat and livestock management practices between potential habitat in Socorro and occupied habitat in Chihuahua, Mexico. 4. Within five years, evaluate research project data to determine the need for changes in management to facilitate recovery of the aplomado falcon.
Carlsbad RMP, Carlsbad Field Office				
Opinion: Non-jeopardy for the Pecos bluntnose shiner				
Pecos Bluntnose Shiner	None	None	None	1. Continue policy of no new oil and gas leasing on lands within the 100-year floodplain of the Pecos River unless it can be demonstrated that other mandatory protective measures will provide adequate protection. 2. Determine if Bureau of Reclamation measures provide protection equal to or greater than BLM measures. If not, meet with the Bureau of Reclamation to encourage strengthening of their measures. 3. Change wording in the Carlsbad Draft RMPA/EIS for land use allocation to protect the 100-year floodplain of the Pecos River rather than just riparian areas. 4. Eliminate exceptions to the no surface occupancy policy for 100-year floodplains where they would cause habitat degradation for bluntnose shiner. 5. Compile conditions of approval and other pertinent information for oil and gas operations and other activities in the 100-year floodplain into a single guidance document for the ease of understanding by applicants. 6. Consider potential habitat, in addition to critical and occupied habitats, when evaluating no surface occupancy requirements or project reviews.
Roswell RMP, Roswell Field Office				
Opinion: Jeopardy for the Pecos bluntnose shiner and Pecos gambusia Non-jeopardy for the interior least tern				
Pecos Bluntnose Shiner	1. Monitor bluntnose shiner populations and habitat. 2. Give priority to implementing management prescriptions for the North Pecos River ACEC and developing and implementing a strategic watershed management plan for the Pecos River from Yeso Creek to the Bitter Lake National Wildlife Refuge. 3. Continue the policy of no new oil and gas leasing on lands within the 100-year floodplain of the Pecos River unless it can be demonstrated that other mandatory protective measures will provide adequate protection. 4. Change wording in the Draft RMPA/EIS for the land use allocation to protect the 100-year floodplain of the Pecos River rather than just riparian areas. 5. Eliminate exceptions to the no surface occupancy policy for 100-year floodplains where they would cause habitat degradation for bluntnose shiners. 6. Compile conditions of approval and other pertinent information for oil and gas operations and other activities in the 100-year floodplain into a single guidance document for the ease of understanding by applicants.	None	None	None

TABLE 3-8
RMP BIOLOGICAL OPINIONS

	Reasonable and Prudent Alternatives	**Incidental Take**	**Reasonable and Prudent Measures**	**Conservation Recommendations**
Pecos Gambusia	1. Map the source and movement of subsurface water that supplies springs occupied by Pecos gambusia on the Bitter Lake National Wildlife Refuge and Salt Creek Wilderness Area. Close these lands mapped to oil and gas leasing unless mandatory protective measures ensure no aquifer contamination. 2. For leases within the mapped area, apply protective measures to prevent water contamination and monitor oil and gas activities to detect surface or subsurface accidents soon enough to avoid harm to the aquifer and the associated populations of Pecos gambusia. 3. Continue policy of no new oil and gas leasing on lands within the 100-year floodplain of the Pecos River unless it can be demonstrated that other mandatory protective measures will provide adequate protection. 4. Change wording in the Draft RMPA/EIS for the land use allocation to protect the 100-year floodplain of the Pecos River rather than just riparian areas. 5. Eliminate exceptions to the no surface occupancy policy for 100-year floodplains where they would cause habitat degradation for Pecos gambusia. 6. Compile conditions of approval and other pertinent information for oil and gas operations and other activities in the 100-year floodplain into a single guidance document for the ease of understanding by applicants.	None	None	None
Interior Least Tern	None	None	None	1. Conduct breeding season surveys in potential habitat for interior leas 2. If breeding birds are found, develop a management strategy to protect habitat.
Farmington RMP, Farmington Field Office				
Opinion: Jeopardy for the southwestern willow flycatcher, Colorado River squawfish, and razorback sucker Non-jeopardy for the Mesa Verde cactus General Conservation Recommendations: Amend the RMP as appropriate to incorporate new management direction				
Southwestern Willow Flycatcher	1. Develop a management plan for flycatchers that maps and describes occupied and potential habitat, prioritizes areas for surveys, and prescribes management for grazing and habitat improvement activities. 2. Allow no livestock grazing in occupied or potential habitat. 3. Allow no vegetation manipulation that would degrade flycatcher habitat or prevent improvement of habitat. Survey for flycatchers before removing saltcedar. Do not remove saltcedar if flycatchers are detected. Retain some saltcedar for structure until establishment of native species. Conduct a programmatic Section 7 consultation on saltcedar removal. 4. If nesting flycatchers are found, monitor nest success and parasitism. Evaluate and minimize land use practices within 5 miles of occupied habitat acting as concentration sites for cowbirds. Initiate cowbird trapping if appropriate.	None	None	1. Continue to survey potential habitat for flycatchers. Prioritize and ma areas to be surveyed. Maintain and establish a database to store survey d 2. Assess the impacts of recreational activity. 3. Summarize upland vegetation and soils trend information on areas adj to riparian habitat. 4. Exclude the river tracts and other riparian areas from grazing and mo soil and vegetation response.

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TABLE 3-8
RMP BIOLOGICAL OPINIONS

	Reasonable and Prudent Alternatives	Incidental Take	Reasonable and Prudent Measures	Conservation Recommendations
Colorado River Squawfish and Razorback Sucker	(Note: These species were covered under a 1993 Biological Opinion (Jeopardy Determination), that contained nine reasonable and prudent alternatives associated with potential contamination of the San Juan, Animas, and La Plata rivers by polycyclic aromatic hydrocarbons (PAHs). These reasonable and prudent alternatives are modified and carried forward in this opinion.) Existing Reasonable and Prudent Alternatives 1. Sample the three rivers (17 sites) for streamflow and collect water and sediment samples for chemical analysis. 2. Sample a population of approximately 800 federal oil/gas well sites at a 95 percent confidence interval for PAH types and concentrations. 3. Sample 12 soil pedons not subject to potential PAH contamination to establish a background contamination level. 4. Sample atmospheric contamination by PAHs at 12 sites. 5. Sample drainages containing greater than 100 parts per million PAHs. In addition, collect additional samples from drainages (and springs in those drainages) near facilities suspected of contributing contamination. 6. Use the results of the monitoring to immediately apply remedial action through changes in stipulations and development of BMPs. 7. Conduct long-term monitoring at sites previously sampled. 8. Ensure data are automated for statistical and spatial analysis. 9. Support the San Juan Basin Recovery Implementation Program. New Reasonable and Prudent Alternatives 1. Map, summarize, and analyze data already collected. Continue monitoring studies and forward all data and results to the USFWS. 2. Item 4 of the original reasonable and prudent alternatives is amended to use different methodology.	None	None	None
Mesa Verde Cactus	None	None	None	1. Exclude portions of the habitat from grazing, and monitor to determine differences in population trend between grazed and ungrazed.

Source: Biological Opinions from USFWS on eight RMPs in New Mexico (1997).

RECREATION

New Mexico has a growing number of visitors seeking a wide variety of recreational opportunities. The 1996 Statewide Comprehensive Outdoor Recreation Plan for New Mexico included statewide surveys to determine opinions regarding park, recreation, and open space interests and priorities. The surveys identified the most popular recreation activities of New Mexico residents to be jogging/walking, shore fishing, picnicking, hiking, sightseeing, nature viewing, swimming, developed and primitive camping, pleasure driving, and bicycling.

Recreation and tourism on public lands is one of the fastest growing segments of the state economy. Recreation and tourism is ranked as first in jobs and second in revenue by the New Mexico Tourism Department in Santa Fe. The top four reasons people visit New Mexico according to the State Tourism Department are for the open space character, cultural tourism, history of the various regions, and outdoor recreation opportunities.

Federal lands help satisfy the growing public demand for outdoor recreation. In 1996, the public made 3.2 million visits to New Mexico public lands for outdoor recreation (BLM Recreation Management Information System, 1996). The BLM-administered public lands in New Mexico offer a variety of recreational opportunities. The land includes desert mountain ranges, whitewater rivers, caves, rugged lava flows, arid desert expanses, rolling pinon-juniper wooded terrain, forested Ponderosa hillsides, sand dunes, and multi-colored badlands landscapes. Most of the uses depend on the natural and cultural features of the land. However, a great deal of recreation occurs near towns because the public lands are open for free non-commercial recreational use and are easily available.

Visitors participate in traditional activities including picnics, piñon nut harvesting, camping, recreational shooting, hunting, fishing, hiking, horseback riding, sightseeing, and risk-seeking sports such as rock climbing, mountain biking, caving, and whitewater boating. Visitors also enjoy wildlife viewing, visiting historic sites, wind sailing, and driving off-highway vehicles.

Because of this growing interest and participation in outdoor recreation, significant demands are placed on some existing recreation sites and facilities. More recreation sites and facilities, and upgrades of existing sites, are needed to satisfy the demands of a growing population.

Recreation activities are managed through the RMPs prepared by the Field Offices. Recreation projects are generally implemented in priority order. EISs or Environmental Assessments with public input are prepared before surface-disturbing site-specific recreation projects are undertaken. The BLM issues special use permits for competitive and commercial recreation activities such as motorized competitive events, outfitter and guide services, and tours.

The BLM in New Mexico has 10 high-use developed sites. They include the Wild Rivers Recreation Area, Angel Peak, Orilla Verde, Datil Well, Three Rivers, Valley of Fires, La Cueva, Dripping Springs, El Malpais National Conservation Area, and Aguirre Springs. The Wild Rivers Recreation Area is the only developed recreation site that allows livestock grazing in the picnic and camping areas.

In addition to the developed sites, recreation on public lands focuses on the following attractions:

- 3 National Wild and Scenic Rivers
- 1 National Conservation Area
- 3 National Wilderness Areas
- 7 National Recreation Trails
- 1 National Scenic Trail
- 7 National Back Country Byways
- 76 Areas of Critical Environmental Concern
- 600 Wild Caves
- 24 Adventures in the Past historic and Prehistoric Sites
- 10 Watchable Wildlife Viewing Sites
- 12 Off-Highway Recreation Vehicle Areas
- 25 Special Recreation Management Areas
- 3 recreation Pilot Fee Projects

In addition to these attractions and specific locations mentioned above, many New Mexicans use the public lands for traditional seasonal uses such as picnics, recreational shooting, hunting big game, and pinon nut harvesting. Many of these uses involve use of off-highway vehicles for access.

Motorized vehicles not travelling on designated roads or in a designated off-highway vehicle recreation area create new tracks that damage vegetation, soils, and riparian areas. Unauthorized off- highway vehicle use and road proliferation are a concern for visitors and

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resource managers. Additional issues that affect recreation users and resource managers are littering, vandalism, illegal fuelwood cutting, and controlling visitor use. Attempts to improve these issues are addressed in BLM RMP Amendments, EISs Environmental Assessments, educational programs, volunteer projects, fee sites, and permits.

As with all multiple uses, there are conflicts that develop between uses. Conflicts between livestock grazing and recreational use develop from time to time. With the exception of the Wild Rivers Recreation Area, livestock have been excluded from all developed recreation sites. The facilities at the Wild Rivers Recreation Area were placed in a concentration area. Recreation visitor complaints include livestock destroying property by trampling, livestock becoming a hazard for mountain bikers using the hike/bike treadway, and creating sanitation problems at picnic and camp sites. A satisfactory solution to the multiple conflicts has not been developed at this time.

Most undeveloped recreation sites are accessible to grazing. Typical complaints by recreational users at undeveloped sites refer to livestock degradation of scenic quality, water quality, vegetative trampling, and overgrazing creating soil erosion. However, some areas that are frequently used for recreation are not grazed or are grazed lightly. For example, the Rio Grande corridor administered by BLM is closed to grazing, as are portions of the Rio Chama corridor.

WILDERNESS

In 1984, Congress designated both the Bisti and De-Na-Zin Wilderness, totalling 26,400 acres of public land in New Mexico. In 1987, Congress designated the Cebolla and West Malpais wilderness areas (WAs), totalling 102,500 acres of public land. In 1996, Congress added 16,525 acres linking the Bisti and De-Na-Zin WAs and creating one larger Bisti/De-Na-Zin WAs. The total acreage of New Mexico's three designated BLM WAs is 145,425 acres.

The total acreage for New Mexico BLM Wilderness Study Areas (WSAs) is 955,964 acres in 55 areas. These areas await Congressional action.

The Wilderness Act of 1964 and BLM's *Interim Management Policy for Lands Under Wilderness Review*, (1995), does not preclude livestock grazing in wilderness.

LANDS AND REALTY

In managing the public lands in the state of New Mexico, the BLM is responsible for permitting a wide variety of actions involving public lands. The realty program is responsible for granting rights-of-way, permitting temporary use areas, acquiring easements, and facilitating the acquisition or disposal of public lands. The realty program also processes land withdrawals, Recreation and Public Purposes Act applications, and land use permits. In addition to permitting activities, compliance inspections on grants and permits are conducted to ensure that any stipulations attached to permits are being adhered to. Depending upon the needs of each Field Office and the communities around them, the types and numbers of realty actions will vary across the state.

Rights-of-Way

Rights-of-way are the most common applications received in the lands program (Automated Lands and Minerals Record System, 1996). Rights-of-way, leases, and permits are granted to qualified individuals, businesses, and governmental entities for the use of public lands. Rights-of-way actions are coordinated, to the fullest extent possible, with federal, state, local, and tribal government agencies, adjacent landowners, and interested individuals and groups. All right-of-way applications are considered on a case-by-case basis and are subject to site-specific environmental analysis. Each project proposal contains mitigation measures and stipulations in order to minimize or avoid impacts that may result from surface-disturbing activities.

Rights-of-way are generally linear in nature. They may involve the transmission of oil and gas and their related products or utility-oriented lines including power, water, and phone lines or communication sites. Rights-of-way are also granted to businesses and private individuals for access roads. Table 3-9 shows the numbers of rights-of-way grants issued in 1996, the acres for those rights-of-way grants, and the field office that issued the rights-of-way grant.

Because of the topographic and land ownership constraints that exist in each field office and the BLM's efforts to minimize environmental damage from the construction of rights-of-way, the Bureau has encouraged the placement of new rights-of-way within, or adjacent

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TABLE 3-9
RIGHT-OF WAY GRANTS ISSUED IN 1996

Office issuing the Right-of-Way Grant	Number of Right-Of-Way Grants issued	Acres of Right-of-Way Grants issued
Farmington	169	1995
Albuquerque	8	50
Taos	14	75
Socorro	13	100
Las Cruces	31	350
Roswell	31	245
Carlsbad	270	1515
Total Statewide	536	4330

Source: USDA, BLM 1996, Automated Lands and Minerals Record System.

to, existing rights-of-way. As a result, de facto right-of-way corridors have been developed over the years on public lands.

In addition, each BLM field offices land use planning has resulted in rights-of-way windows or corridors being designated as the preferred location for future placement of transmission lines. Other area have been designated as rights-of-way exclusion and avoidance areas that place restrictions or stipulations on rights-of-way in order to protect the special or sensitive resource values within those areas. Rights-of-way that exist in exclusion or avoidance areas are recognized as grandfathered, and the operation, maintenance, and renewal of those facilities is allowed to continue within the scope of the original right-of-way grant.

Land Ownership Adjustment

There are generally three categories in which the public lands administered by the BLM can be placed. (USDI, BLM, Farmington RMP, 1988). They are retention exchange, or acquisition zones. In 1976, the FLPMA was passed. Congress declared that public lands be retained in federal ownership unless, as a result of land use planning, it was determined that disposal of particular parcels would serve the national interest. (Public Law [P.L.]94-579, Sec.102a, Oct. 21,1976).

It was determined through the land use planning process that land ownership adjustment was an issue to be dealt with in each field office. As a result, retention zones and potential disposal and acquisition zones have been designated in planning documents.

Retention zones usually consist of consolidated blocks of public land or public land that contain resources of national, state, or regional significance. Examples of such resources are habitat for threatened or endangered species, riparian areas, wetlands, and important cultural resources (USDI, BLM, Farmington RMP, 1988). While lands in retention zones will usually remain under BLM administration exchanges within retention zones may be possible if it is clearly determined that it is in the best interest of the public (USDI, BLM, Socorro RMP, 1989.

Disposal zones generally contain tracts of isolated or scattered parcels of public land and resources that are difficult to manage. Acquisition zones are generally areas where land and resource management can be improved by consolidating public lands in contiguous land ownership patterns. These proposed acquisition areas are often located in Special Management Areas for the benefit of wildlife habitat, watersheds, land treatment areas, grazing administration, cultural values, or wilderness and recreation areas. There are a number of ways that adjustments can be made in land ownership. The BLM determined that major land transfer actions be handled in the following order of preference: (1) transfers with the state of New Mexico; (2) private exchanges (3) Recreation and Public Purpose Act patents; (4) withdrawals to other federal agencies, (5) public sales, and (6) other methods of adjustment.

Exchanges and Sales

All exchange or sale proposals must be conducted in accordance with Sections 203 and 209 of FLPMA and the requirements of NEPA. Extensive public review is required for each proposal. Existing authorized permits, leases, rights-of-way, and licenses are considered valid existing rights, which remain with land disposed to other parties.

Although exchanges and sales may involve acreage of considerable size, at fair market value, the process is slow and complex. Therefore, few exchanges or sales are completed each year.

When an exchange is initiated, grazing permittee and lessees are given a two-year notice of cancellation of their preference. If the BLM disposes of land, holders of valid permits or cooperative agreements covered by Sections 4 and 15 of the TGA are reimbursed for financial investments they have made in rangeland improvement projects on public land.

In 1994, the BLM State Director for New Mexico and the New Mexico State Commissioner of Public Lands signed a new Memorandum of Understanding establish a comprehensive, long-term statewide land exchange program between the BLM and the State of New Mexico. The objectives of this program are: " 1) to improve the land management potential of both state and federal lands; 2) eliminate unnecessary federal and state conflicts generated by existing ownership patterns; 3) facilitate the management of state and public lands by substantially realigning the scattered state and public sections to create solid blocks or consolidated land ownership; and 4) develop procedures that are most expeditious and cost effective." (1422G910-MOU-9401).

The following are acres identified in the RMPs for disposal.

Field Office	Acres
Albuquerque	58,000
Las Cruces	340,460
Farmington	324,940
Taos	84,518
Carlsbad	220,700
Socorro	0[4]
Roswell	103,670

Recreation and Public Purposes Act

The BLM, under the Recreation and Public Purposes Act (68 Statute 173; 43 United States Code (U.S.C.) 869 et. seq.) has the authority to lease or patent public land to governmental or qualified non-profit entities for public parks, building sites, correction centers, or other public purposes at less than fair market value. The BLM classifies, for purposes of the act, the amount of land required for efficient operation of the projects described in an applicant's development plan. Applications are processed under the requirements of NEPA and are subject to public review. After a Recreation and Public purposes Act application is approved, the BLM periodically reviews the areas leased or sold to ensure continued compliance with the terms of the lease or patent.

Public Land Withdrawals

Withdrawals are formal actions that set aside, withhold, or reserve federal land by statute or administrative order for public purposes (USDI, BLM, Roswell RMP, 1994). While it is BLM policy to keep public lands open for public use and enjoyment, there are conditions that warrant the removal or withdrawal of certain lands from general use. The integrity of special uses is ensured through the withdrawal of public lands. Types of withdrawals include mineral withdrawals in Special Management Areas to protect important resource values or withdrawing land for water power and reservoir sites.

Secretarial orders have been used to withdraw public lands from general use by transferring management responsibility to other Department of Interior agencies, such as the Bureau of Indian Affairs and the Bureau Of Reclamation. In addition, public lands have been transferred by Executive Order to agencies outside of the DOI such as the Department of Agriculture (USDA) U.S. Forest Service (FS), the Department of Defense (DOD), and the Federal Aviation Administration (FAA). In such cases, both the lands and the responsibility for their management are transferred.(USDI, BLM, Rio Puerco RMP, 1986).

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[4] While no acres were identified for disposal in the RMP a criteria was established.

To keep as much of the public land open to the widest variety of uses, withdrawals are reviewed on a periodic basis to ensure that the reasons for the withdrawals are still valid and that only the acreage needed remains in a withdrawn status. Upon revoking or modifying a withdrawal, all or part of the withdrawn land may be returned to multiple use management.

Access

As the population of New Mexico continues to grow, so does the need to use public lands. This is especially true for people seeking recreational opportunities. Because of increasing use, problems have surfaced in areas where public lands are isolated and there is no legal access. It is difficult for the BLM to effectively manage isolated parcels of public lands where no legal access exists.

To help reduce access problems, some field offices are developing transportation plans. The plans identify where easements are needed and existing roads are present, but are not needed for efficient transportation to and across public lands. Normally only one or two easements are acquired each year for each office.

CULTURAL RESOURCES

Introduction

Culture has been defined as "the traditions, beliefs, practices, lifeways, arts, crafts, and social institutions of any community, be it an Indian tribe, a local ethnic group, or the people of the nation as a whole" (*National Register Bulletin 38*). Cultural resources are the fragile and nonrenewable products of modern, historic, and prehistoric human activity. Historic properties may be in the form of historic districts, sites, buildings, structures, or objects and are important to our understanding of prehistory and history. Traditional cultural places hold significance because of their association with cultural practices or beliefs of a living community, and are important in maintaining the cultural identity of that community. Both historic properties and traditional cultural places can be eligible for inclusion in the National Register of Historic Places. Congress has declared that "the spirit and direction of the Nation are founded upon and reflected in its historic heritage" and that "the historical and cultural foundations of the Nation should be preserved...in order to give a sense of orientation to the American people" (National Historic Preservation Act of 1966).

The BLM has legislated responsibilities to manage and protect cultural resources under laws such as the Antiquities Act of 1906, Executive Order 11593, Archaeological and Historic Preservation Act of 1974, American Indian Religious Freedom Act of 1978, Archaeological Resources Protection Act of 1979, PL 96-550 and National Historic Preservation Act of 1966. Sections 106 and 110 of the National Historic Preservation Act require federal agencies to inventory and evaluate historic properties on federal land and ensure that they are taken into account before authorizing any federally funded or permitted undertaking. The act and its implementing regulations require that the BLM identify and evaluate any historic properties within a project's area of effect and consult with the State Historic Preservation Officer (SHPO) and Advisory Council on Historic Preservation (ACHP) prior to approval. The BLM has a Programmatic Memorandum of Agreement with the New Mexico SHPO and ACHP under which projects can be approved prior to individual consultation if it has been determined that they will have no effect on historic properties that are included in or eligible for inclusion in the National Register of Historic Places. If a historic property cannot be avoided, BLM consults with SHPO to agree on measures to mitigate adverse effect to the site. A proposed nationwide Programmatic Agreement between BLM and ACHP may soon replace the existing statewide Programmatic Agreement. Under the new national Programmatic Agreement, Section 106 compliance of a routine and non-controversial nature would be handled internally without case-by-case review by the ACHP or SHPO. Before this agreement can go into effect, BLM will be obligated to establish an internal Preservation Board, revise BLM Cultural Resource Management manuals and handbooks, develop state-specific BLM/SHPO protocols, train field managers and staff, and certify offices to operate under the revised procedures.

Of the 13,500,000 acres of public land in New Mexico, approximately 1,015,000 acres, or 7.5 percent, have been inventoried for archaeological and historic properties. To date, 25,947 sites have been recorded on BLM land in New Mexico.

Overview

The earliest period of human occupation in New Mexico is referred to as the Paleoindian Period, dating to at least 10,000 years B.C. The last ice age was receding at that time and the climate was cooler and wetter. Small, highly mobile groups of people travelled continually in search of game. There is evidence that game animals were herded off cliffs as a way to kill them for food. Subsistence strategies and technology from this period were fairly uniform, with an emphasis on procuring large, now extinct, game species such as mammoth and an extinct form of bison. More than 100 archaeological sites from this period have been recorded on BLM-administered land in New Mexico.

The second broad time period is referred to as the Archaic Period, from about 6,000 B.C. to 0 A.D. The climate was becoming warmer and drier, population was increasing, and the small, still highly mobile bands began exploiting a much wider variety of food resources, with an increasing dependance on plant foods. Grinding stones or "manos" appeared in the stone tool assemblage and projectile point styles became more regionally differentiated. During the second half of the period agriculture was introduced, probably from Mexico, but it did not become a major focus until much later. More than 1,500 Archaic sites have been recorded on BLM-administered lands in New Mexico to date.

Population expansion, settled communities, increased dependence on cultivated crops, above ground architecture, pottery, and the bow and arrow are all characteristic of the ensuing Pueblo Period. Many dramatic changes in settlement and subsistence patterns occurred throughout this period, lasting from about 0 A.D. to Spanish contact in the late-sixteenth century. Local differentiation continued and became more marked. The Anasazi Culture in northwestern New Mexico is renowned for its magnificent masonry architecture and the Mogollon heartland in southwestern New Mexico is best known for its beautiful Mimbres bowls. In the eastern part of the State a lifestyle more similar to that of the Archaic Period persisted well into the nineteenth century. To date more than 9,000 sites from the Pueblo Period have been recorded on BLM land in New Mexico.

After about 1200 A.D., Pueblo groups shifted drastically in different regions but persisted. Athapaskan groups (ancestors of modern Navajos and Apaches) moved into the area, the Spanish arrived in the late-sixteenth century and Anglo/Euro-American homesteaders settled in the nineteenth century. The entire time from European (Spanish) contact until 50 years ago is referred to broadly as the Historic Period and includes sites from Spanish colonial settlements, post-contact Native American sites, trails such as the Santa Fe and Camino Real, Civil War forts and battlefields, early farming and ranching sites, early industrial sites, and even Cold War practice areas and targets. The Spanish brought horses into the Southwest, and as a consequences herding became adopted permanently by both the Spanish and certain Native Americans.

Today, as communities in the United States become more and more homogeneous, New Mexico's multicultural heritage stands out as a unique cultural landscape and plays an important role in attracting tourists to the state. New Mexico was settled first by Indians, then by Hispanics, and finally by Anglo peoples. Current distribution of the three ethnic populations tends toward areas of single-group dominance resulting from the sequence of occupation, economic bases of the different groups, and past solutions to conflict between groups. This separation of cultures has provided for the continuance and evolution of distinct traditions of language, art, culture and religion. Five out of the top nine reasons tourists visit New Mexico are related to cultural resources (including museums, Indian Reservations, performing arts, historical and archaeological sites, and festivals and fairs), accounting for a large percentage of New Mexico's $2.2 billion a year tourism industry (Office of Cultural Affairs 1996).

PALEONTOLOGY

New Mexico has a fossil record that includes almost all of the geologic periods from the Cambrian (500+ million years ago) to the Recent (the last 10,000 years), and nearly every imaginable ancient environment. Many New Mexico fossil deposits are of national and international importance, and close to 1,000 different kinds of fossils were originally made known to the scientific world from specimens first found in New Mexico. Many of them still have not been found anywhere else. Study of these fossils plays an important role in subdisciplines of the field of paleontology such as paleobotany, paleoecology, paleobiogeography and biostratigraphy. (Mike O'Neill, personal comm. 1996.)

Fossil deposits on public lands can be subject to damage and destruction as a result of federally funded and permitted development, as well as from off-road vehicle use and unauthorized collection. BLM's policy is to locate, evaluate, and classify paleontological resources on public land and give them full consideration in all aspects of public land management. BLM also has responsibility for facilitating appropriate scientific and educational uses of paleontological resources. These responsibilities are mandated in FLPMA and NEPA. At the field office level, paleontology is managed under various programs such as cultural resources, geology, and recreation.

MINERAL RESOURCES

Mineral resource extraction is a major use of the public lands in New Mexico. Exploration, development, and production of minerals occurs either under lease, by sale (mineral materials), or by location (mining claims). Leasable mineral activity is concentrated in the southeastern and northwestern quadrants of the state. Mineral material sales occur throughout the state at scattered sites that are usually situated near most towns and cities in New Mexico, especially areas where cities are expanding rapidly. One exception is the significance and number of caliche pits in the southeast part of the state associated with oil and gas development. The hard rock minerals claims, by the nature of occurrence of the minerals, are generally located in the mountainous regions of the state. There are nearly 10,000 active mining claims on public lands in New Mexico.

The primary salable minerals are caliche, sand and gravel, building stone, and decorative rock. These minerals are developed by use permits and sold by weight or unit volume from quarries or pits. There are approximately 1,200 caliche pits in southeastern New Mexico, of which 300 are actively used. On average, these pits may cover from 1 to 5 acres, although some are over 15 acres in size. Sand and gravel operations are the next most common, located near population centers and used for construction and paving aggregate.

The majority of active locatable mining operations are on patented claims which are no longer in the public domain. The activity on public land claims consists of a few dozen exploratory drilling operations, and recreational collecting and panning. These "small miner" operations may affect up to 100 acres of public land annually. There are public lands involved in the expansion of four copper mines in the southwestern part of the state. While less than 50 acres of BLM land are presently impacted within open pit mining, future expansion will involve more than 200 acres of BLM land inside pit boundaries and more than 1,600 acres for tailings disposal, haul roads, and waste rock disposal areas. Although considered a dormant activity, there are a few uranium claims on public land in the McKinley County area.

The primary leasable minerals are oil and gas, coal, and potash. During calendar year 1995, the federal government collected a little over $236.5 million in leasable mineral royalties, rents ,and other revenue. Of this total, a little over $119 million was disbursed to the State of New Mexico (USDI, Minerals Management Service State Minerals Summaries 1995).

Oil and Gas

A total of 33,829 oil and gas wells have been drilled on public land in New Mexico. Of these, 23,240 are currently producing. There are 10,562 oil and gas leases, of which 6,022 are producing leases covering 3,640,000 acres. Oil and gas drilling activity varies from year to year depending on various factors such as market economics, equipment availability, and the status of reservoir plays. Based on filings over the last 10 years, an average of just under 900 permits to drill are received annually by BLM field offices for federal lands in New Mexico. The amount of land affected by oil and gas development may vary from about ¾ acre to as much as 5 acres per well depending on the depth of the well and the length of the access road. Most well locations are less than 2 acres. During 1995, a little over 953 billion cubic feet of natural gas, 27.6 million barrels of oil, and 9.2 billion cubic feet of carbon dioxide were produced from federal leases in New Mexico. The total sales value of this production was approximately $1,579,000,000 (USDI, Minerals Management Service Minerals Revenue, 1995).

Coal

There are 11 federal coal leases in northwestern New Mexico, of which six are currently producing. These leases are being developed by five active coal mines potentially affecting 11,897 acres of public land. During 1995, 6,242,364 short tons of coal were produced from these leases, worth about $184,000,000. There are two federal coal leases in western New Mexico covering 6,440 acres. A mine permit to develop those two leases is currently pending (USDI, Minerals Management System Minerals Revenue 1995).

Potash

The potash leases in southeast on New Mexico are being developed by five underground mining operations. There are two inactive and two abandoned mines in this potash area. While the mining operations themselves are underground, tailings ponds, mills and ancillary facilities at the mines occupy up to several hundred acres at each site. During 1995, about 762,000 short tons of sylvite and 568,000 short tons of langbeinite worth 109.7 million dollars were produced from the potash leases. Also, about 222,000 tons of sodium and sulfur, worth about $700,000 were produced from leased federal land (USDI, Minerals Management Service Minerals Revenue 1995).

NATIVE AMERICAN CULTURAL ISSUES

Certain locations on the landscape may be important to Native American groups for a variety of reasons including collection of traditional plants and minerals, hunting, and the presence of sacred sites and shrines. Another way in which places can be important is for instruction. Places serve as reminders of people and events from the past, tales of which are used for instruction and admonition. Even the places themselves are considered to instruct, admonish, and impart wisdom once the stories have been learned.

A number of laws protect Native American concerns and require consultation with Native American tribes under certain circumstances. These laws include NEPA, the American Indian Religious Freedom Act, the National Historic Preservation Act, Native American Graves Protection and Repatriation Act NAGPRA, and Archaeological Resource Protection Act. Topics of consultation may include potential for adverse effect on historic properties (including traditional cultural properties), policies or actions which could affect free practice of traditional religion, disposition of human remains, associated funerary objects and sacred objects, and general concerns about the effect of a proposed project on the environment.

ECONOMIC CONDITIONS

This section describes the current economic situation of the State of New Mexico. As a part of the entire New Mexico economy; the range livestock sectors are a very minor portion; however, when New Mexico is considered as a group of economies (counties), the number of agricultural economies are greater than the number of urban economies. The total level of economic output for New Mexico is approximately $60 billion, including the $18 billion household sector. The impact from changes to the range livestock industry will be negligible to the urban economies, but highly imposing to the rural counties with large acreage of BLM land. Land ownership by County is shown in Table 3-10.

An Input-Output (I-O) model developed by (NMSU) Department of Agricultural Economics and Agricultural Business was used to determine the current economic conditions in New Mexico, estimate the changes that would occur directly to the range livestock industry, and estimate the total impact to the state's economy that would occur with implementation of the rangeland management alternatives presented in the EIS on BLM lands. The following describes an input-output model and the methodology used in development of the New Mexico models.

An Input-Output model is a mathematical repre-sentation of the purchases and sales patterns within a region or economy. It is essentially a "map" of the economic linkages among industries within an economy and between these industries and the rest of the world. This map shows the interdependence of the Industries within an economy and quantifies impacts from external changes to the economy. With this information it is possible to accomplish the following:

- describe the present economic situation of an industry by tracing the current dollar flows though the economy and

- forecast the initial effects of external changes in an industry by modifying the specifications of the model, and observing the resulting changes in the overall economy.

The NMSU Department of Agricultural Economics and Agricultural Business, in cooperation with University of Wyoming and the University of Nevada Cooperative Extension Service, developed an Input-Output model for the state of New Mexico and Chaves County. The original model, developed at the University of Wyoming, was adapted from Micro IMPLAN tables (Olson and Scott 1994), a widely used national model. The model for NMSU was customized with New Mexico data to

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TABLE 3-10

LAND OWNERSHIP OF NEW MEXICO BY COUNTY, 1994

County Name	Square Miles	Acres	BLM	Percent	USFS	Percent	Total Federal	Percent	State	Percent	Indian	Percent	Private	Percent
Bernalillo	1,166	746,240	12,820	1.72	75,764	10.15	154,590	20.72	32,201	4.32	222,527	29.82	336,922	45.15
Catron	6,928	4,433,920	592,907	13.37	2,222,126	50.12	2,799,004	63.13	533,037	12.02	0	0.00	1,101,879	24.85
Chaves	6,071	3,885,440	1,175,698	30.26	40,332	1.04	1,265,500	32.57	722,473	18.59	0	0.00	1,897,467	48.84
Cibola	4,540	2,905,600	399,608	13.75	322,060	11.08	656743	22.60	229,746	7.91	689,551	23.73	1,329,560	45.76
Colfax	3,757	2,404,480	1,215	0.05	70,061	2.91	15,740	0.65	278,189	11.57	0	0.00	2,110,551	87.78
Curry	1,406	899,840	0	0.00	0	0.00	3,862	0.43	60,667	6.74	0	0.00	835,311	92.83
DeBaca	2,325	1,488,000	35,377	2.38	0	0.00	90,848	6.11	234,570	15.76	0	0.00	1,162,582	78.13
Dona Ana	3,807	2,436,480	1,122,974	46.09	0	0.00	1,821,515	74.76	286,910	11.78	0	0.00	328,055	13.46
Eddy	4,182	2,676,480	1,403,002	52.42	135,013	5.04	1,648,563	61.59	477,730	17.85	0	0.00	550,187	20.56
Grant	3,966	2,538,240	292,249	11.51	885,502	34.89	1,294,877	51.01	367,685	14.49	24,000	0.95	851,678	33.55
Guadalupe	3,031	1,939,840	49,584	2.56	1,752	0.09	120,053	6.19	117,810	6.07	0	0.00	1,701,977	87.74
Harding	2,126	1,360,640	603	0.04	0	0.00	70,506	5.18	344,981	25.35	0	0.00	945,153	69.46
Hidalgo	3,446	2,205,440	740,665	33.58	76,589	3.47	893,679	40.52	354,431	16.07	11,000	0.50	946,330	42.91
Lea	4,393	2,811,520	427,854	15.22	0	0.00	466,952	16.61	873,748	31.08	0	0.00	1,470,820	52.31
Lincoln	4,831	3,091,840	524,717	16.97	398,744	12.90	1,103,482	35.69	301,841	9.76	0	0.00	1,686,517	54.55
Los Alamos	109	69,760	0	0.00	30,036	43.06	64,448	92.39	0	0.00	0	0.00	5,312	7.61
Luna	2,965	1,897,600	746,547	39.34	0	0.00	786,150	41.43	534,951	28.19	10,670	0.56	565-829	29.82
McKinley	5,449	3,487,360	231,251	6.63	190,200	5.45	564,580	16.19	183,974	5.28	2,158,410	61.89	580,396	16.64
Mora	1,931	1,235,840	7,561	0.61	100,993	8.17	107,642	8.71	81,638	6.61	0	0.00	1,046,560	84.68
Otero	6,627	4,241,280	939,568	22.15	563,681	13.29	2,886,626	68.06	449,908	10.61	460,255	10.85	444,491	10.48
Quay	2,875	1,840,000	819	0.04	0	0.00	14,535	0.79	237,714	12.92	6	0.00	1,587,751	86.29
Rio Arriba	5,858	3,749,120	559,004	14.91	1,413,169	37.69	1,953,173	52.10	108,530	2.89	646,932	17.26	1,040,485	27.75
Roosevelt	2,449	1,567,360	7,706	0.49	0	0.00	38,517	2.46	211,140	13.47	0	0.00	1,317,703	84.07
Sandoval	3,710	2,374,400	526,289	22.17	384,434	16.19	987,297	41.58	80,192	3.38	650,380	27.39	656,531	27.65
San Juan	5,514	3,528,960	801,366	22.71	0	0.00	1,039,281	29.45	168,416	4.77	2,110,692	59.81	210,571	5.97
San Miguel	4,717	3,018,880	48,644	1.61	340,451	11.28	394,215	13.06	173,808	5.76	0	0.00	2,450,857	81.18
Santa Fe	1,909	1,221,760	72,124	5.90	245,046	20.06	336,157	27.51	85,857	7.03	79,548	6.51	720,198	58.95
Sierra	4,181	2,675,840	855,540	31.97	383,674	14.34	1,830,310	68.40	361,195	13.50	0	0.00	484,335	18.10
Socorro	6,647	4,254,080	943,131	22.17	619,549	14.56	2,318,458	54.50	609,854	14.34	56,680	1.33	1,269,088	29.83
Taos	2,203	1,409,920	219,733	15.58	521,984	37.02	733,325	52.01	97,144	6.89	62,288	4.42	517,163	36.68
Torrance	3,345	2,140,800	19,537	0.91	153,881	7.19	207,787	9.71	299,805	14.00	16,300	0.76	1,616,908	75.53
Union	3,830	2,451,200	758	0.03	0	0.00	58,725	2.40	441,946	18.03	0	0.00	1,950,529	79.57
Valencia	1,068	683,520	23,271	3.40	15,865	2.32	43,291	6.33	22,000	3.22	160,000	23.41	458,229	67.04
New Mexico	121,365	77,673,600	12,782,122	16.46	9,190,906	11.83	26,770,431	34.47	9,364,091	12.06	7,359,233	9.47	34,177,925	44.00

Sources: U.S. Department of Commerce. 1994. 'County and City Data Book 1994'. Government Printing Office, Washington D.C.

Diemer, Joel A. and Alvarez, Rossana C. 1990. 'New Mexico Land Use, By County 1982 - 1988'. Agricultural Experiment Station Research Report 644, College of Agriculture and Home Economics, New Mexico State University. Las Cruces, NM

Williams, J.L. 1986. 'New Mexico in Maps.' P 261. University of New Mexico Press, Albuquerque, New Mexico

New Mexico Stockman, 1994. Directory of New Mexico Agriculture. pp. 172-254.

adequately define the spending patterns of New Mexico industries. The agriculture industries were expanded to include of all major crops produced in the state and provide a comprehensive description of agriculture. Each agricultural sector's 1992 sales and expenditures were based on the three-year average (1991 through 1993) of NMSU crop (Libbin and Hawkes 1991, 1992, 1993) and livestock (Torell and Hawkes 1991, 1992, 1993) cost and return estimates and New Mexico agricultural statistics (New Mexico Agricultural Statistics Service 1991, 1992, 1993). In 1997 the coal, oil and gas, and Fed cattle sectors were updated with primary data for the state of New Mexico. The values of production and expenditure data were used to develop direct requirement coefficients for the model. Employment and income data from the U.S. Commerce Department's Bureau of Economic Analysis (BEA 1992), were used to calculate sector employment and income for all standard industrial classifications included in the model.

Direct (primary) economic influence can be used to predict indirect and induced (secondary) economic effects using the New Mexico Input-Output model. These influences have a ripple effect throughout the economy of New Mexico, caused by the interactions between industries, secondary spending, and the interdependence of the industries.

In analyzing the economic situation of federal forage AUMs, a value of production per AUM is required as an input into the model as a direct influence. In estimating the value of production per AUM, it was determined that a single year would misrepresent the effects to the economy. Since cattle prices follow a cycle it was determined that a 12-year (1985 through 1996) average of values per AUM would encompass a full price cycle between two lows in the cycle (Figure 3-1). The value of production per AUM and the number of AUMs were run in the NMSU New Mexico Input-Output model to predict the total economic losses to the New Mexico economy. In 1992, the cattle industry fared well, it was an extremely wet year, (Figure 3-2) and cattle prices were at a high. If this was the year used as input data, the economic situation would be overestimated. The other extreme would be to use 1996, when New Mexico was in a drought (Figure 3-2) and cattle prices were at a low (Figure 3-1). This year would underestimate the economic situation. Although sheep and goats do not follow the same price cycle as cattle, values per AUM and numbers of AUMs were used for the same 12 year period. Because there is a greater number of cattle AUMs than sheep and goat AUMs, the cattle cycle was used. In 1992[3] the range cattle[4] industry directly provided almost $314 million in economic activity to the state of New Mexico, including $19 million in personal income and 2,632 Full Time Equivalents (FTEs)[5]. This industry provided total (direct and indirect) economic activity of over $620 million. of which almost $97 million was in personal income from 5,500 FTEs. The sheep[6] industry directly provided $10 million in economic activity for the state of New Mexico, which included $976,000 in personal income and 299 FTEs. Indirectly the industry provided $22 million in economic activity, $3.5 million in personal income and 192 FTEs.

HUMAN DIMENSION

Human dimension describes the financial, social and cultural components that are important for NEPA assessment. The principles of ecosystem recognize the human environment as a component. The human dimension component is comprised of financial, social, and cultural, resources. The declaration in the National Environmental Policy Act (section 101(a)) states:

> The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony and fulfill the

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[3] 1992- Base year for the New Mexico Input-Output Model, an average of 1991, 1992, 1993.

[4] Range Cattle Industry - includes beef cow - calf and yearling operations. Does not include dairy cattle, sheep and goats, or fed cattle (feedlots).

[5] FTE - Full time equivalent - One full time, 40 hours per week, job.

[6] Sheep- includes sheep and goat operations.

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FIGURE 3-1

CATTLE PRICES 1950 - 1997

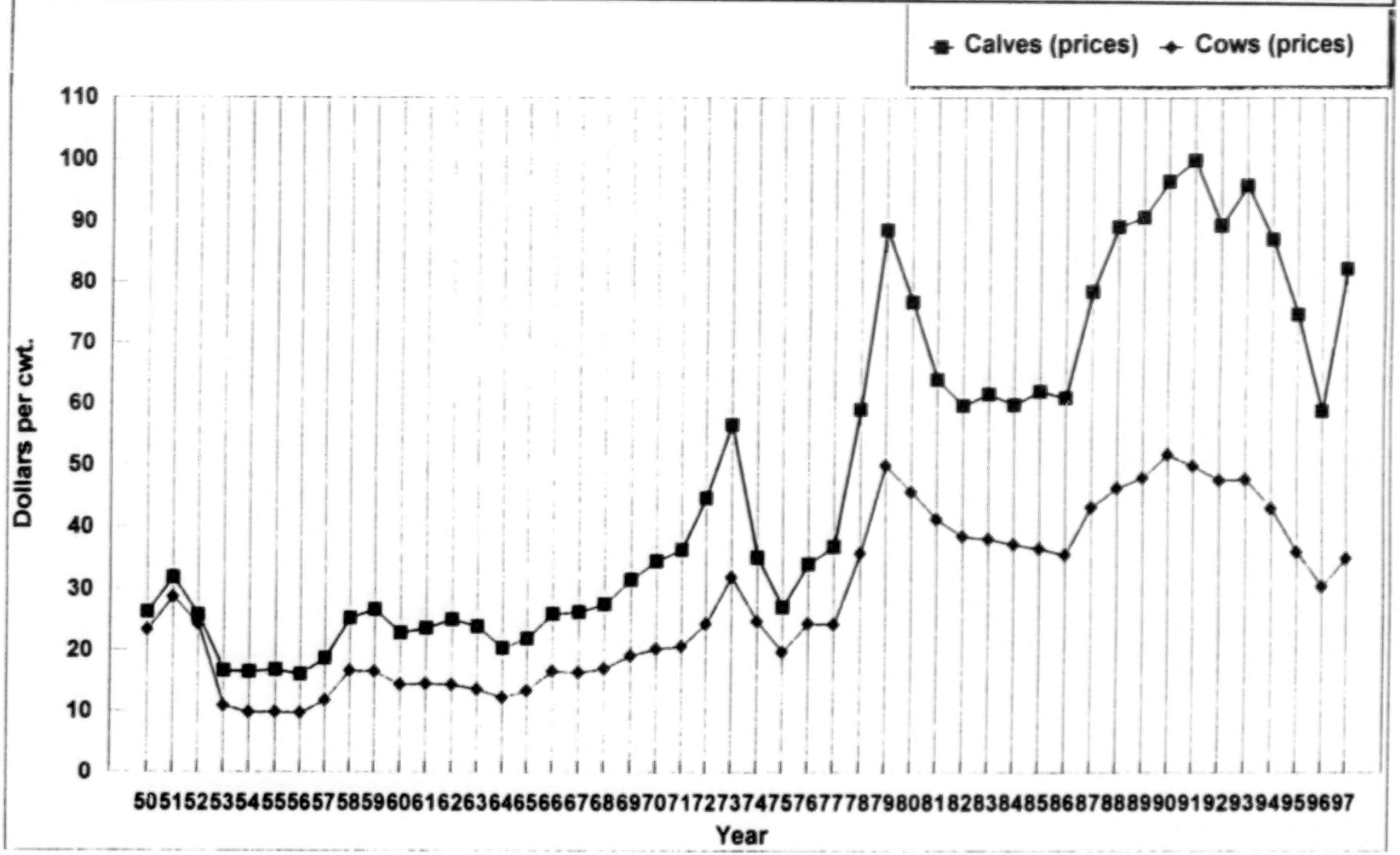
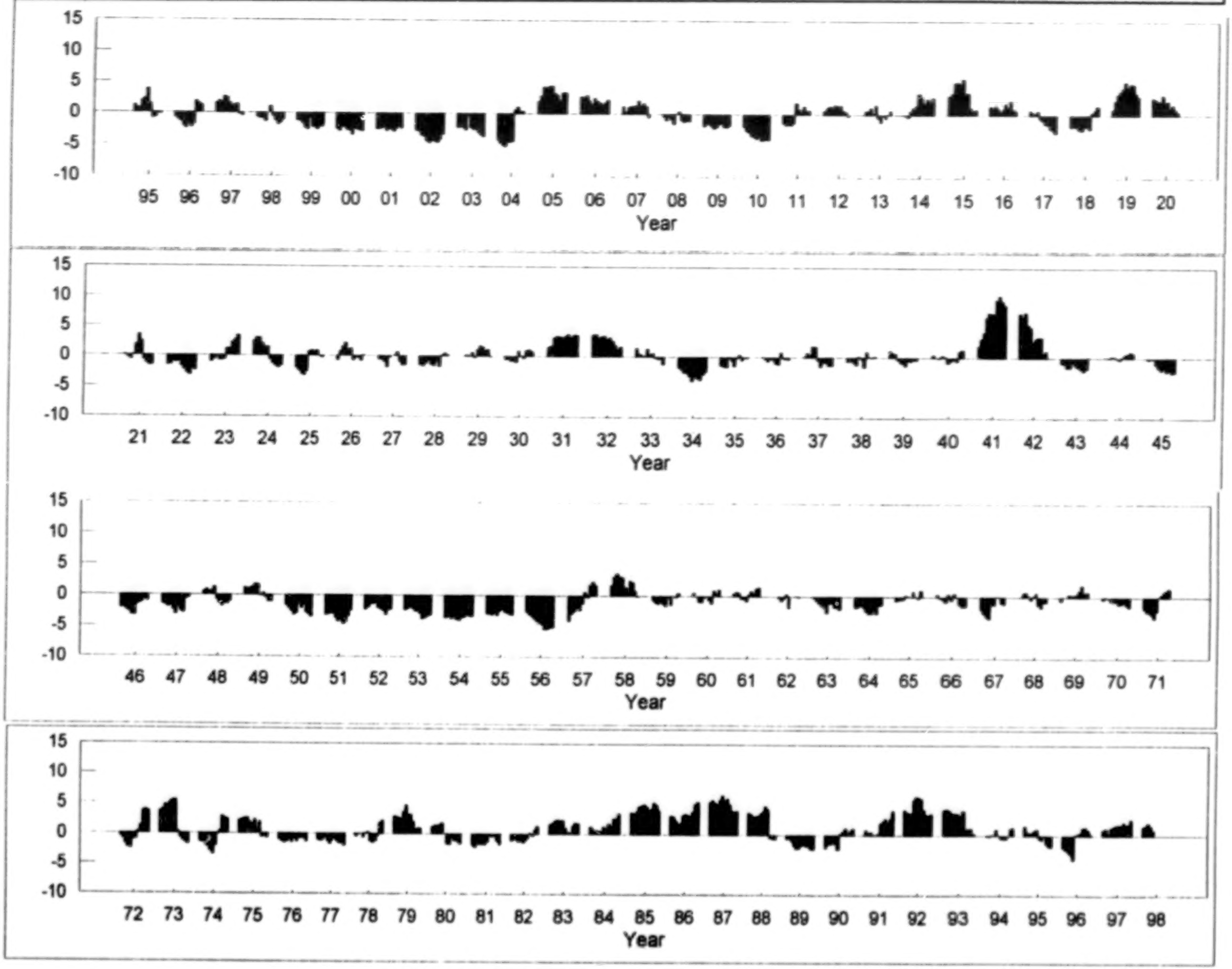


FIGURE 3-2
PALMER DROUGHT SEVERITY INDEX (PDSI)
NEW MEXICO



social, economic, and other requirements of present and future generations of Americans.

The New Mexico State University natural resources program has developed a triangle, (Polley, 1996) that represents three necessary requirements for properly functioning conditions: (1) physical resources (water, soil, air), (2) biotic resources (plants and animals), and (3) the human dimension (management, communities, infrastructure). Human dimension or social capital includes the financial capital, science, general public involvement, state, local, tribal and federal governments, professional management, and the users of the land necessary for achieving natural resource goals like healthy public lands.

Recent research has focused attention on the need to incorporate human dimension as a key component to meeting properly functioning rangeland systems. (Thadis Box, 1993, Debra Finch and Joseph Tainter, 1993 and J.J. Kennedy, B.L. Fox, and T.D. Osen, 1994). This is especially true because the professional natural resource manager for BLM uses a combination of direct and indirect management of the resources. For example, the resource manager may study and monitor the conditions of the land as they change over time. They may also have activities such as land treatments where they directly participate. However, they often rely on indirect management. For example, a rancher may be relied upon to provide labor and capital to manage their use of the land in an appropriate fashion to met land management objectives.

Financial, Social and Cultural Conditions

Financial

Financial Conditions for a Properly Functioning Rangelands:

Allen and Hokstra, (1994) state that "...a stable and adequate economic base is a requirement for sustainability" (for reaching a properly functioning healthy rangeland condition). As a business, the public land rancher looks at the net return on his/her investment, according to resource economist John Nalivka, (1993):

The net return to the rancher is the result of combining all of the resources (feed, water, capital, and management) and because it results in an economic return to the rancher, his long term incentive is to enhance the total productivity of these resources and use them more effectively. The management of these resources in an environment of risk and uncertainty to produce a marketable product at a competitive cost is the essence of determining the value of the ranch. In other words, the economic condition of the business which is dependent upon scientific condition and sustained yield of the renewable grazing resource determines the economic value of the ranch. The economic well-being of each ranch subsequently contributes to the economic health of the industry and the industry contributes to the economy of the county, state and Western U.S. as a whole. A secure and optimal balance of forage, water, market access, and capital access is the key to the long term viability of any operation more specifically, the public land rancher, where the major consideration of range livestock operations and their ability to manage risk and maintain economic viability is access to and the ability to utilize a forage base which is well balanced with regard to availability, quality, and seasonal use.

In short, as the range improves in productivity with the help of the rancher, the rancher should re-establish his or her profitability and pay the variable costs. Once the profitability is achieved, the rancher will invest capital to improve the healthy ranges. The improved healthy ranges will provide a more secure environment for family and community stability. With improved security and stability, the rancher will have greater incentive to further invest in public land improvements.

John Fowler states that historically "federal land policies have encouraged development and investment by the grazing permittee. The TGA provided enhanced stewardship, financially stable communities and livestock industry" (Fowler, 1994). The key TGA policy is the Grazing Preference, which was adjudicated to provide security of tenure to encourage investment and commitment on the part of the rancher. In return, TGA states that "Grazing privileges recognized and acknowledged shall be adequately safeguarded, but the creation of grazing district or the issuance of a permit pursuant to the provisions of this Act shall not create any right, title, interest, or estate in or to the land".

Financial Environment

The current financial conditions of the BLM dependent ranches in the Central Mountain Region that may be affected by the alternatives were analyzed to establish a base line for comparison. (see Appendix D).

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The Central Mountain Region is one of five regions (others being the Northwest Region, Northeast Region, Southwest Region, and Southeast Region) which data analysis was completed on. While it may not be representative of the other regions it was the only region completed at this time.

Central Mountain Region

There are four typical ranch size categories in this region: extra-small (53 head); small (133 head); medium (284 head); and large (485 head). These ranches are composed of mixed ownership of grazing land including: private land, New Mexico State Trust Land lease, USFS permit, and BLM permit or lease. None of the typical ranches in this region are more than 27 percent dependent on BLM grazing, with some as little as 12 percent dependent on BLM grazing.

Under current conditions, based on the 10-year-average budgets, all typical ranches in the region are meeting and are above the Financial Threshold for Production. The extra-small ranch is the only size that does not meet the Financial Threshold for Profitability; however, it does pay at least half if its overhead costs from ranching income. The small ranch pays a very small portion of the owner's salary, while the medium and large ranches pay full salaries to the owners, with some residual profit.

Local governments and agencies are supported by: the tax base created from the private land portions of the ranch; per head livestock taxes, fees and expenses; maintenance and capital improvements of facilities on all ownerships of grazing land; and taxable base from owned improvements on some grazing lands. Some local governments have a concern that BLM will not have the resources to implement the range improvements needed to achieve the successful implemetion of the livestock grazing guidelines.

Social

This section presents an overview of the social trends and conditions of New Mexico and the public lands.

Social Conditions for Properly Functioning Rangelands

The other component to human dimension is social considerations that are prerequisites for meeting the Human Dimension. Conditions and attributes must be consistent with civil rights, property rights, and environmental justice, and providing basic stewardship incentives to encourage investment and commitment to healthy rangelands.

Population Influx and Changing Demographics

New Mexico and the western intermountain region are experiencing unprecedented population in-migration and economic growth. The in-migration is due part to the growing number of retirees moving into New Mexico. There will be 650,000 more New Mexicans in 2015 than in 1995...This is the equivalent of adding the combined current populations of Albuquerque, Las Cruces, Santa Fe and Roswell. (Condrey and Guillen, 1996).

The population influx into rural communities is increasingly driven by globalization of the economy and the resultant disconnect between income and lifestyle. That is to say, many former urbanites are now moving into small western communities where they can work out of their homes (Werther, 1997 and Hecox and Ack, 1996). The in-migration can have significant social and economic effects on small communities, driving up the cost of living and pushing affordable homes beyond the reach of current and future low to moderate income families (Gevanious, 1997, Herbert, 1996).

Findings of a New Mexico growth management study, commissioned by New Mexico legislature, reinforces the costs and benefits to New Mexico as:

> Benefits of growth include higher tax revenues, more jobs, new businesses, and increased economic growth...Baby boom generation has been influential in driving the demand for schools, housing and shopping, plus the infrastructure to serve them...Growth varies widely throughout New Mexico, as does its effects. Some communities grow with their landscapes, cultures, economies and overall character will change dramatically. How a community is fiscally [and environmentally] affected is often contingent upon the rate, location and type of growth...The effects on New Mexico brought by high growth rates often collide with growing desire to protect the state's assets such as water, unique character and way of life... (Condrey and Guillen, 1996).

Recent studies underscore this shift in population, as well as the related effects on natural resources, environmental quality, human settlements and infrastructure, necessary for sustainability. (Hecox and Ack, 1996, Farley, 1995, Wright, 1993, Condrey and Guillen, 1996).

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"The demise of the western landscape is taking place because of the piecemeal subdivision and development of fields, floodplains, and forests ... a few acres at a time" and, while the "destruction of ecological and open space resources is tragic enough,...assaults on "place"...fracture the union of land and culture [with] equally grave implications. (Wright, 1993). These implications are clear enough to the people who face the problems of a region reeling in sweeping political and economic change. Once the communities and individuals whose values stand as the fundamental beliefs of America's best find themselves displaced and disinherited from the land they hold sacred, we are left with the question: "If we are reflections of the places where we live, what will become of us if we exist in a landscape of fear, pollution, monotony, and lost promise? (Wright 1993).

Population Growths and Effects on Rural Communities

Where population growth expands communities must adjust to new conditions and demands. The following are a few of the concerns that develop where populations increase in rural communites.

- Depletion of water tables
- Increasing waste
- Increased potential for wildfires
- Increasing risk to wildlife
- Increasing need for emergency services
- Additional law enforcement
- Stress on the infrastructure
- Financial stress on existing resources

Urban Interface Effects on Public Lands

Human settlement has been and continues to effect the biological, physical and human dimensions of ecosystems. The population growth will continue to occur on the urban fringe of existing small towns and cities in New Mexico. The rate and magnitude of urban growth and its effects on healthy public lands varies according to the size of the human settlement and the proximity between urban land interface with public lands. The areas adjacent to this growth experience the most significant adverse affects to public lands (Steiner, 1997 and Werther 1997).

The urban interface is the zone adjacent to cities and towns where the public lands and their resources are more frequently and intensive used for legal and illegal activities.

According to BLM (BLM Urban Reports 1997), the current estimates of urban land interface zones, with the public lands, is approximately 3 percent of the total public lands. The effects on the interface zones include: trash dumping, shooting firearms, wildfires, uncontrolled pets (dogs and cats), air and noise pollution, damage or theft of natural resource and improvements, poaching, violation of archeological sites, unauthorized OHV travel, trespassing, vandalism and a general increase in criminal activities, as well as effects from residential subdivisions, and water quality and depletion of the water tables. Public land management challenges in the future will focus on urbanization impacts. (Steiner, 1997, Werther 1997, Daugherty and Snider, 1997). Newcomers to the state consider public lands as a very attractive amenity and that smaller communities are also very attractive to relocate to.

Cultural

The purpose of this section is to describe the present living custom and cultural environment.

Historically, New Mexico has been dominated by three cultures Native American, Hispanic and Anglo. New Mexico today is a blending of these cultures. Although each of the cultures has its distinct features, each has roots to rural origins and the raising of livestock on native rangelands. However, the rapid increase population the New Mexico is bringing with it some new citizens that do not have the same attachment to the livestock grazing on rangelands. Therefore, the attitudes and effects could be quite different between rural and urban cultures. The culture sections are divided into the Customs/Rural and Urban descriptions.

Customs/Rural

Livestock Based Culture

The manner in which the common or public domain lands of New Mexico were used for raising livestock grew out of a blending of Native American and Spanish customary uses of the land. Customary use of land and its resources sustained over time shaped the cultures. The Native American customs and culture had been in place centuries before the Spaniards brought livestock into the region in the 1500s. As settlements were established, the people used water and forage on the surrounding rangelands for the purpose of raising their livestock. The rangelands were generally lands whose

soil would not support farming, but was suitable for soil would not support farming, but was suitable for raising livestock.

At the end of the Mexican-American War, the United States signed a treaty with Mexico called the Treaty of Guadalupe-Hidalgo. The Treaty was signed in 1848 and applied to most of the lands in New Mexico today. Article VIII of the Treaty of Guadalupe-Hidalgo specified that:

> Mexicans now established in territories previously belonging to Mexico, and which remain for the future within the limits of the the United States, as defined by the present treaty, shall be free to continue where they now reside, or to remove at any time to the Mexican republic, retaining the property which they possess in the said territories, or disposing there of, and removing the proceeds wherever they please, without their being subjected, on this account, to any contribution, tax, or charge whatever.
>
> Those who shall prefer to remain in the said territories, may either retain the title and rights of Mexican citizens, or acquire those of citizens of the United States. But they shall be under the obligation to make their election within one year from the date of the exchange of ratifications of this treaty; and those who shall remain in the said territories after the expiration of that year, without having declared their intention to retain the character of Mexicans, shall be considered to have elected to become citizens of the United States.
>
> In the said territories, property of every kind, now belonging to Mexicans not established there, shall be inviolably respected. The present owners, the heirs of these, and all Mexicans who may hereafter acquire said property by contract, shall enjoy with respect to it guaranties equally ample as if the same belonged to citizens of the United States.

The terms of the Treaty continue intact, however there is controversy with different interpretations of the Treaty. The rural citizens of New Mexico believe the Treaty should be honored and protected by the United States. In response to the controversy Congressman Bill Redmond introduced H.R. 2538, a Bill to Establish a Presidential Commission to Determine the Validity of Certain Land Claims Arising out of the Treaty of Guadalupe-Hidalgo of 1848.

In 1934, the U.S. Congress enacted the Taylor Grazing Act which provides for grazing leases and permits:

> ... permits to graze livestock ... to such bona fide settlers, residents, and other stock owners ... Preference shall be given in the issuance of grazing permits to those within or near a [grazing] district who are landowners engaged in the livestock business, bona fide occupants or settlers, or owners of water or water rights. The Taylor Grazing Act goes on to state, PROVIDED FURTHER, That nothing in the Act shall be construed or administered in any way to diminish or impair any right to possession and use of water for mining, agriculture, manufacturing, or other purposes which has heretofore vested or accrued under existing law validly affecting the public lands or which way be hereafter initiated or acquired and maintained in accordance with such law. So far as consistent with the purposes and provisions of this Act, grazing privileges recognized and acknowledged shall be adequately safeguarded, but the creation of a grazing district or the issuance of a permit pursuant to the provisions of this Act shall not create any right, title, interest, or estate in or to the lands".

The intent of Congress was to provide stockholders with "...some type of assurance as to where and what kind of range they may have and depend upon in the way of pasturage" (78 Congressional Record). The grazing privileges were subsequently adjudicated to determine who was eligible for a grazing preference. The term "grazing preference" represents a preference for a grazing permit. The grazing preference was attached to the base property of the ranch and was transferred to the party who owned or controlled the base property. The completion of the adjudication process provided predictability and security of tenure to livestock operators. This predictability and certainty in grazing permits provides the security to obtain financing for livestock capital, operations and improvements on the public land.

The Secretary of the Interior has the authority to regulate the grazing to protect the rangeland. Good range management and proper stewardship of the rangeland is ultimately linked to the security and tenure of the adjudicated preference grazing permit/lease, as expressed and demonstrated by a variety of public land research economists (Martin, 1981, Kelso, 1983, Archer, and Snider, 1984). When predictability and certainty are removed, not only do the ranch finances and family suffer, but the incentive for good stewardship and investment into healthy rangeland improvements is thwarted.
The existence of rural families and communities continues to depend foremost on the availability of land for livestock, crops, timber, and other resources. Land is the

life and well-being of the rural culture in New Mexico. Working the land is the center piece of their livelihood; supported by multiple sources of supplemental income from wages and jobs in town. The land and water based cultures of New Mexico depend on use of natural resources that are derived from land and water. Such uses include ranching, farming, mining, and timber harvesting which leads to sustainability of these communities. These customs include long term use, land ethics and stewardship of the land by individuals and communities. Slowly these communities are changing due to influences outside the community. Televisions, new restrictions on the consumptive use of resources on the public lands, computers, immigration, and out-migration are all examples of influences that are modifying the unique character of the communities. In spite of the modifying influences to their communities, many communities do not have a program to maintain custom and culture on a sustainable manner.

Customs & Cultures of Counties

The counties, Indian tribes and pueblos of New Mexico were asked to define their customs and cultures in their own terms. Their statements have been included in Appendix E.

The customs and cultures of rural New Mexico are outgrowths of the people's values, beliefs. and ways of life, combined with all other aspects of living, which weave a complex whole. These customs and cultures are practiced within a relationship between people and *place*.

Place is the site or sites marking the life of a person the story of their life and that of the lives that came before them. All of these attributes are embodied in the structures they call home, the communities they live near or within, and the environment.

The customary uses of the lands continue to be for croplands, grazing, timber and mining that support rural communities and are contribute to the overall state's economy. The commitment to the land they live and work on is so powerful as to evoke words like: "I don't want to be here [alive], if I can't live here [this person's ranch]." It should be clear then that *place* and identity are virtually inseparable. This is especially true of rural New Mexico where people often cannot, will not, separate themselves from the land they call home (Smith, 1994). Such a separation would destroy the very identity of those people.

The customs and cultures that rural New Mexicans practice on their landscape is inclusive of their home and family and the community they consider themselves a part of. It is a bond between people and *place* that is no less than the bond between flesh and blood; it is wholly dependent upon the fabric of land, people, and community being intact and stable.

The importance of community stability is expressed in the statements of custom and culture from the counties. An example of a commonly held feeling on community is I: "will pass along many of the beliefs and values that are cherished by our rural society..." It is within *place* that the values of a region are cultivated. For the people of rural New Mexico, values are products of their history and their experiences with the land that are essential to the continuation of their way of life. These values include the "meaning of heroism, the relation of the individual to family and community, the nature of patriotism, the value of freedom, the challenge of making a home" (Cronon 1992).

Concept of Public Land Usage

The core values of the people of rural New Mexico form the basis of their concept of their use on the public lands-lands that are so crucial to the security and stability of their rural way of life.

Rural verses Urban Values

Public land means something different to rural New Mexicans than it does to the weekend visitors from the city. This is due mostly to the way rural and urban people associate with land in general and their relationship toward landscape. Rural people formed their relationship to the land with a "blood and blister intimacy", causing them:

> ... to have different interactions with the rangelands than urban societies, often resulting in different perceptions, values and uses. Many modern conflicts over rangeland or wildlife issues are conflicts of agricultural (utilitarian) and urban (biocentric) values about human relationships with the use of nature (Kennedy, Fox and Osen, 1995).

Rural people see land, public or private, with a keener eye than merely utilitarian. Land is literally and figuratively the ground upon which these people have built their existence--an existence based on the customs and cultures developed by their predecessors over centuries

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of land use in New Mexico. For a person related to this view of public lands it is helpful to understand the land base cultures and tenure in the discussion below.

Just as threatening to the rural people of New Mexico as public land policies that adversely affect the land based cultures, is the sometimes swift displacement of community and regional values by the influx of people who bring vastly different sets of values and ways of life to the land.

The migration of people into New Mexico has led to sometimes painful conflicts of interests and values in rural areas of the state, including the use of public lands. This is putting it lightly when uprooting a family from the only *place* they have ever known is a very real possibility. Rural communities have endured the impacts of rural-life seekers from large population centers, escaping from the more frantic life. The results of this growth is felt by local residents who must pay higher property taxes for services demanded by the newcomers.

Changes in the ability to use the public lands, considered essential to rural New Mexicans and without it, even the quixotic rural charm which is so appealing to urban dwellers will disappear.

Urban

New Mexicans, Public Opinion and Public Lands:

The future of public lands in New Mexico will be guided not only by principles and practices of sound resource management but by public opinions and preferences of New Mexicans. While this has been the case in the past, the future will increasingly include the urban dwellers. The future vision for the public lands will be forged by rural and urban interests. While the discussion has focused on displacement of land based cultures and in-migration, public opinion seems to provide some optimism and a framework for the future.

University of New Mexico's Public Policy Center conducted public opinion survey May of 1995. Conclusions from the survey included the following two relevant points:

In considering the proper top priority of the different multiple uses on public rangelands, New Mexicans rate the potential uses as follows:

Point 1
49% view environmental preservation as top priority,
23% view commercial uses as top priority,
22% view recreational uses as top priority, and
6 % view all three as having equal priority
Point 2
A substantial majority (over 75%) of New Mexico citizens believe it to be moderately to extremely important to preserve ranching as a way of life in the state.
(Patrick J. Baca, 1996)

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CHAPTER 4

CHAPTER 4
ENVIRONMENTAL CONSEQUENCES

IMPLEMENTATION OF PUBLIC LAND STANDARDS FOR HEALTH AND GUIDELINES FOR LIVESTOCK GRAZING

Public land standards and livestock grazing guidelines, together with other existing decisions in the RMPs will provide a framework for future decisions. Each standard has a corresponding set of indicators that will be collectively evaluated to make an assessment on the achievement of the standard in the mapping unit of the ecological site. Standards apply to all public lands; however, because resources and staffing are limited, it will be necessary to set priorities for the areas where standards will be assessed.

Livestock grazing guidelines will be applied to ranges where assessments indicate that the standards are not being met and livestock grazing is believed to be a contributing factor in not meeting the standard.

ANALYSIS APPROACH

For this analysis, the most basic question appears to be "How many acres does BLM manage where the standards are not being met?" This determination varies by standard and alternative.

The BLM has a variety of resource data, but has not inventoried the public lands to determine if the proposed standards are being met or not. For example, BLM does not maintain any human dimension data. For the Fallback alternative there were no human dimension factors to consider, while the RAC alternative had a human dimension standard and the County alternative requires a balance between human dimension and biological resources.

A second fundamental question is related to thresholds. Some of the rangelands may have passed through a threshold and will not meet the standard through public land use management alone. For example, some acres are now dominated by brush and or trees. These acres may not meet the standard through use management alone. Some form of brush control will be needed for the standard to be met.

A third fundamental question is how many allotments could be affected by the grazing guidelines?

A forth fundamental question is what additional activities may need to be adjusted for the standards to be met. This is important because it will determine what activities may be impacted by establishing a standard or guideline.

The BLM asked each field office to provide information on the four fundamental questions. For example, the FOs estimated 480 allotments for the Fallback alternative, 428 allotments for the RAC alternative and 287 for the County alternative would have grazing guidelines applied to at least a portion of the allotment. Additionally, each field office provided supplemental information to assist in assessing the scope of impact the various activities. The EIS team then used the field office estimates as a basis for analysis.

This RMP Amendment/EIS presents a sufficient range of scenarios and assessments to allow the reader to determine what it would take to implement the standards and guidelines and what the potential impacts would be.

In addition to the standards and guidelines assessed, a few existing RMP decisions are proposed to be changed as shown in Appendix B. The EIS team reviewed the proposed changes, assessed any potential impacts and included them as part of the analysis, as appropriate. Any potential impacts from changes to RMP decisions are discussed.

Economic Impact Assessment

The potential cumulative economic impacts were determined from implementation of the standards and guidelines for three alternatives RAC Alternative, County Alternative, and the Fallback Alternative.

The total grazing permits/leases projected by each county to be impacted by each of the three alternatives was determined by the BLM field offices. This analysis focuses solely on those allotments that did not meet the standards for any number of reasons as estimated by the BLM. There were 480 allotments not meeting the Fallback standards, 428 allotments not meeting the RAC standards and 287 allotments not meeting the County standards. For the purposes of this analysis, the allotments were treated as the number of ranches impacted. The BLM identified the county location of each ranch; based upon the county location, a ranch budget region was identified and the size of the ranch for each region was determined from the BLM actual authorized animal unit months (AUMs) and the percentage of public land identified for that allotment to ascertain the size of the total ranch in order to categorize the ranch into the historic ranch budget sizes. These representative published ranch budgets associated with the number of AUMs, land tenure pattern and production characteristic by size were then used as the baseline from which all impacts or changes were measured. Published ranch budgets were not available for all ranch sizes in each region; to bridge this gap, adjacent region's budgets for the missing size as well the most similar budget for that region was used to develop an approximation for a representative ranch budgets as the baseline encompassing the four principle ranch budget areas where BLM lands occurs within New Mexico.

A single point in time reference suffers from the large volatile fluctuations of market prices over shadowing the effects and ramification of the event being analyzed; an example would be analyzing a high performance year such as 1994 for the range livestock industry would overstate impacts associated with a change in AUMs, the opposite is true of the price trough in 1987 which would understate the impacts. A 12 year cattle price cycle exists; therefore, an average budget was constructed for both prices, costs, and production characteristics associated with drought and prices. The average production and price cycle was built for the 18 representative ranch budgets and became the baseline from which impacts were quantified.

Individual Ranch Analysis

The developed 10 year average ranch budgets function as the baseline; the ranches not meeting the standards for each alternative were identified by region and distributed as a percent by ranch size. The range livestock industry was then directly involved by making recommendations for each representative ranch size for those ranches not meeting the standard. A ranch template was constructed for each ranch and subsequently modified to improve livestock distribution or forage production by means of fence construction, water locations, drinkers and pipelines or by brush control practices. It was assumed that some of the ranches not meeting the standard could not achieve the standard without a reduction in AUMs; therefore, each alternative had an option of either no BLM AUM reductions or a 20% reduction in BLM AUMs. It was also assumed that 20% of the recommended improvements were installed followed by a year of growing season deferment until the full regime was in place on the ranch by the 10th year after initiating the practices. Associated variable costs of operating and maintaining the ranch with the recommended improvements were developed for each ranch size for the 4 major ranching regions of the state.

Range improvements are long term investments in the basic land resource that require years to yield a positive return to amortize the dollars invested. The initial impacts and ranch progression were diagramed and presented in Figure 4-1. The AUM reductions and/or change in variable costs and additional interest payments were put in place in year one with no further change in costs or AUM numbers until year 7 when the initial reduction was returned to the ranch and one-third of the difference between actual authorized AUMs in 1996 and historic preference for the allotment were restocked. An additional 1/3 increase toward historic preference would be realized in year 14 and completely implemented 21 years after placement of the improvements, these additional AUMs would be partially allocated to livestock as the ecological condition of the allotment improved in terms of productivity, diversity, and residual biomass due to the response from the improvements. Investment costs, variable costs and the value of production were developed for each ranch size and region. The costs and returns were the individual ranch level impacts from implementation of the three alternatives.

Industry Impacts

The number of ranches impacted is the critical link between the individual firm or ranch and the impact to the industry. Aggregating the ranch impact by the number of ranches determined to be out of compliance and not meeting the standards by either the riparian, upland, or biotic standards was the mechanism to determine the total magnitude of AUMs lost/or gained and additional costs/returns incurred.

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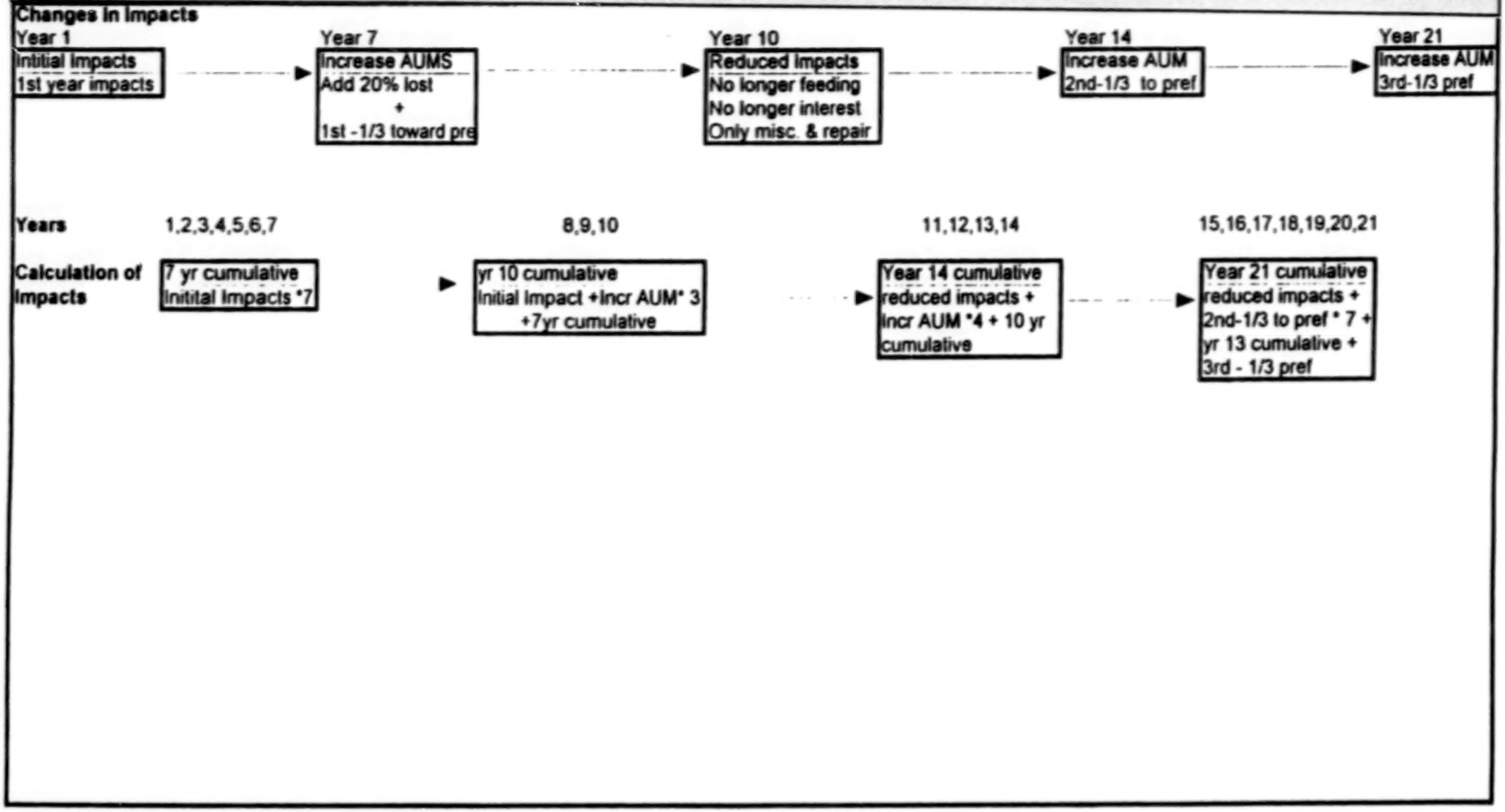
FIGURE 4-1
INITIAL IMPACTS AND RANCH PROGRESSION



Methodology

With the identification of ranches affected by region, as shown in Figure 4-2 and an average budget for each ranch size within each region, impacts to the ranches needed to be identified. This was done with the help of industry representatives and the BLM. The BLM and ranchers cooperatively identified the improvements that were most probable for an allotment in each region to achieve the standard. With this information the industry representatives estimated, as a percentage, the increased variable costs that would be associated with the improvements recommended. These percentages were then applied to the average budget for that particular region and ranch size. At this point there were two options applied to the analysis for all three alternatives:

1. That all of the allotments not meeting the standard could be improved without a reduction in AUMs. Ranches would attempt to feed their way out of the forage deficiency and that the allotment would improve.

2. That some of the allotments would require the removal of AUMs for that allotment to improve and meet the standard. For this option all allotments, not meeting the standard, were analyzed with the removal of 20% of the authorized AUMs.

It should be recognized that both are unlikely and that the real impact would be some point between the two options. After implementing these two options into the analysis, three additional options for the previous 2 options for each alternative, were analyzed for each region, ranch size, and AUM reduction, they were:

1. That the BLM would provide all of the funding for the establishment of the improvements to bring the allotment to standard.

2. That the BLM would provide the funding for the materials and the ranch would provide the labor of constructing the improvement.

3. That the ranch would provide all of the funding for the establishment of the improvements to bring the allotment to standard.

These three options were considered because of the limited funding available to the BLM for range improvements. Neither of the options are likely; but, some combination of all three is most probable to happen.

Another possibility considered in the analysis was that with increased regulation and operating costs to the ranch, some of the ranches would sell the base property for development and no longer use the federal permit. For additional analysis it was assumed that 22%[1] of the ranches not meeting the standard would convert to real estate rather than shoulder the cost of additional improvements and regulation. These ranches, including the permit/lease, were assumed as permanent losses and no longer maintained in production. Although it is possible that the federal permits/leases may be purchased by another ranch, it was not considered in this analysis due to the insecure tenure of federal permits. When 22% of the impacted ranches not meeting the standard were removed, the same assumptions that applied to the scenario that no ranches quit were applied to the remaining 78% of these ranches.

After the baseline budgets and adjusted budgets were created for all assumptions and options, the differences were identified and used as an input into the representative sectors as a change to the sector to identify total economic impacts to the New Mexico economy (in the I-O model). These changes in management were calculated to quantify the total economic impacts of the initial or first year impacts to the state of New Mexico. The initial impacts were then aggregated over a seven year period to determine the cumulative impacts of implementation of the guidelines for the fast seven years. In year seven it was assumed that the allotment had improved to the point that 1/3 of the difference between authorized AUMs and preference AUMs would be allowed on the allotment, plus the reauthorization of any AUMs removed. The initial impacts continued to year 10, because it was assumed that full implementation of the improvement would be completed at that point. At this time the economic impacts to the State would be less severe, because the only permanent change in the

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[1] Percent of ranches identified in "Economic Characteristics of the Western Livestock Industry" as ranches in New Mexico that would convert to real estate with the loss of federal AUMs.

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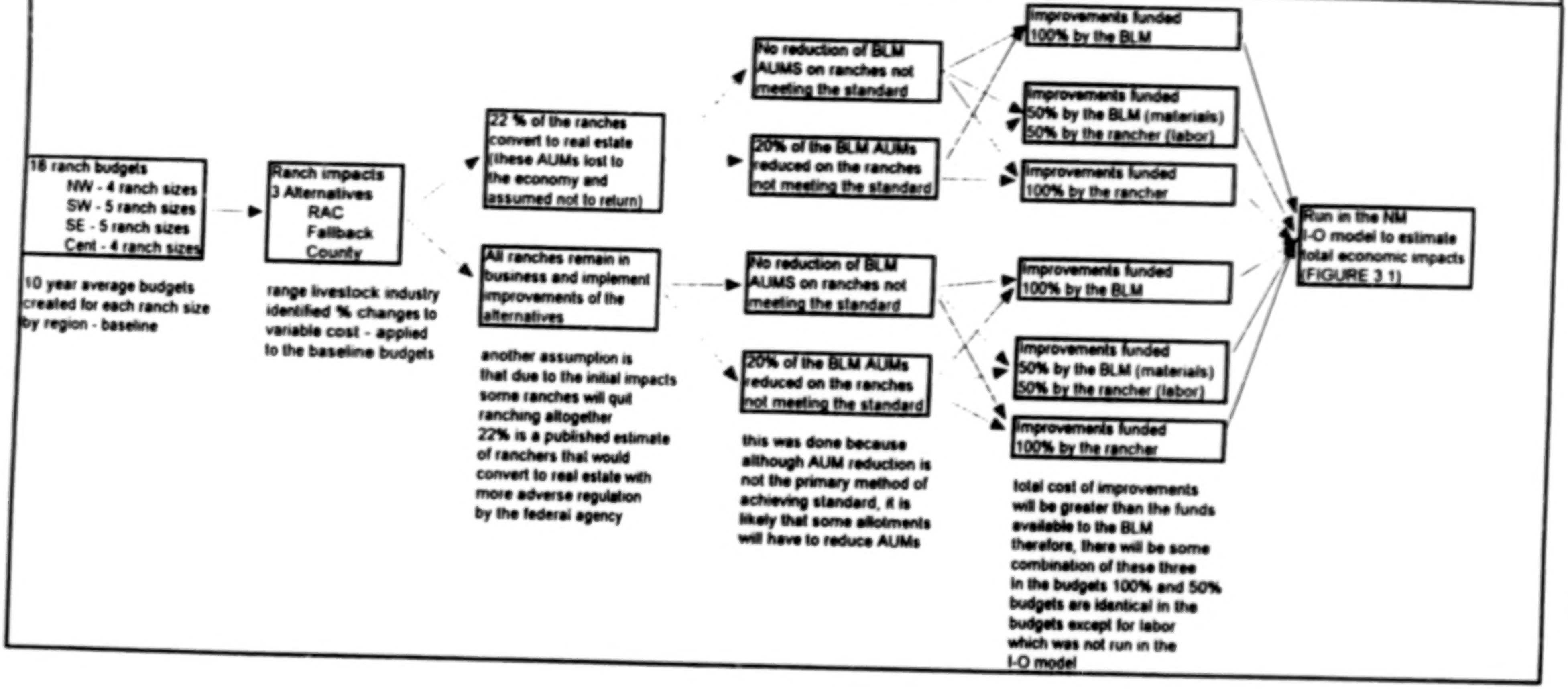
FIGURE 4-2
OUTLINE OF METHODOLOGY


18 ranch budgets
NW - 4 ranch sizes
SW - 5 ranch sizes
SE - 5 ranch sizes
Cent - 4 ranch sizes
10 year average budgets created for each ranch size by region - baseline
Ranch impacts
3 Alternatives
RAC
Fallback
County
range livestock industry identified % changes to variable cost - applied to the baseline budgets
22 % of the ranches convert to real estate (these AUMs lost to the economy and assumed not to return)
All ranches remain in business and implement improvements of the alternatives
another assumption is that due to the initial impacts some ranches will quit ranching altogether 22% is a published estimate of ranchers that would convert to real estate with more adverse regulation by the federal agency
No reduction of BLM AUMS on ranches not meeting the standard
20% of the BLM AUMs reduced on the ranches not meeting the standard
No reduction of BLM AUMS on ranches not meeting the standard
20% of the BLM AUMs reduced on the ranches not meeting the standard
this was done because although AUM reduction is not the primary method of achieving standard, it is likely that some allotments will have to reduce AUMs
Improvements funded 100% by the BLM
Improvements funded 50% by the BLM (materials) 50% by the rancher (labor)
Improvements funded 100% by the rancher
Improvements funded 100% by the BLM
Improvements funded 50% by the BLM (materials) 50% by the rancher (labor)
Improvements funded 100% by the rancher
total cost of improvements will be greater than the funds available to the BLM therefore, there will be some combination of these three In the budgets 100% and 50% budgets are identical in the budgets except for labor which was not run in the I-O model
Run in the NM I-O model to estimate total economic impacts (FIGURE 3.1)

spending pattern of the range cattle industry would be the maintenance and repairs of the additional improvements. In the 14th year an additional 1/3 of the AUMs toward preference would be authorized for the allotments that previously did not meet the standards. And the final 1/3 of preference AUMs would be authorized in the year 21 after the initial identification of the allotment not meeting the standard.

Human Dimension

The analysis focuses on the three alternatives identified as identified for Healthy Public Lands: RAC, County and Fallback, assessing the effects on the human dimension. The human dimension includes financial, social, and cultural impact analyses.

This financial portion of the Human Dimension analyzes the impacts only for the Central Mountain Region. The region includes parts of the following counties: Rio Arriba, Otero, Lincoln, Torrance, Santa Fe, Mora Colfax, Bernalillio, Sandoval, San Miguel and all of Los Alamos County (see map 4-1). The Central Mountain Region is the only one of five regions analyzed to date and the only one on which data is included in this document.

The human dimension impact analysis starts with an overview of the financial effects on public land ranchers; followed by an assessment of the social and cultural impacts.

Focus of the Human Dimension Impact Analysis:

The next section presents for each alternative include the following impact analyses of:

- Financial
- Social
- Cultural

Analysis Common To All Alternatives

This section presents issues and concerns that pertain to all of the alternatives. The items presented include the following analysis:

- Small Business Regulatory Impact Analysis
- Private Property Rights Analysis
- Water Rights
- Water Quality
- Wildlife Conservation Act
- Equity Impact Analysis
- Civil Rights Analysis
- Environmental Justice
- Mitigation Measures
- Cumulative Effects

ASSUMPTIONS FOR ANALYSIS

1. Disturbance from authorized uses would not necessarily prevent or preclude a site from meeting the standard. However, where proposed disturbance might result in the site not meeting the standard, any and every opportunity to improve the condition would be taken through stipulations on permitted uses and other means so that the overall trend is upward and the activity can be approved.

2. The demand for public lands for a variety of uses will continue to increase.

3. Existing laws will continue in effect, and use authorizations will continue to be issued by BLM.

4. BLM staffing will remain the same.

5. Monitoring levels of authorized activities will remain the same.

6. For purposes of analysis, the short term is considered to be 5 years and the long-term is 20 years.

7. The NMDGF will control the increase in elk populations.

8. In 20 years grazing preference would be reached.

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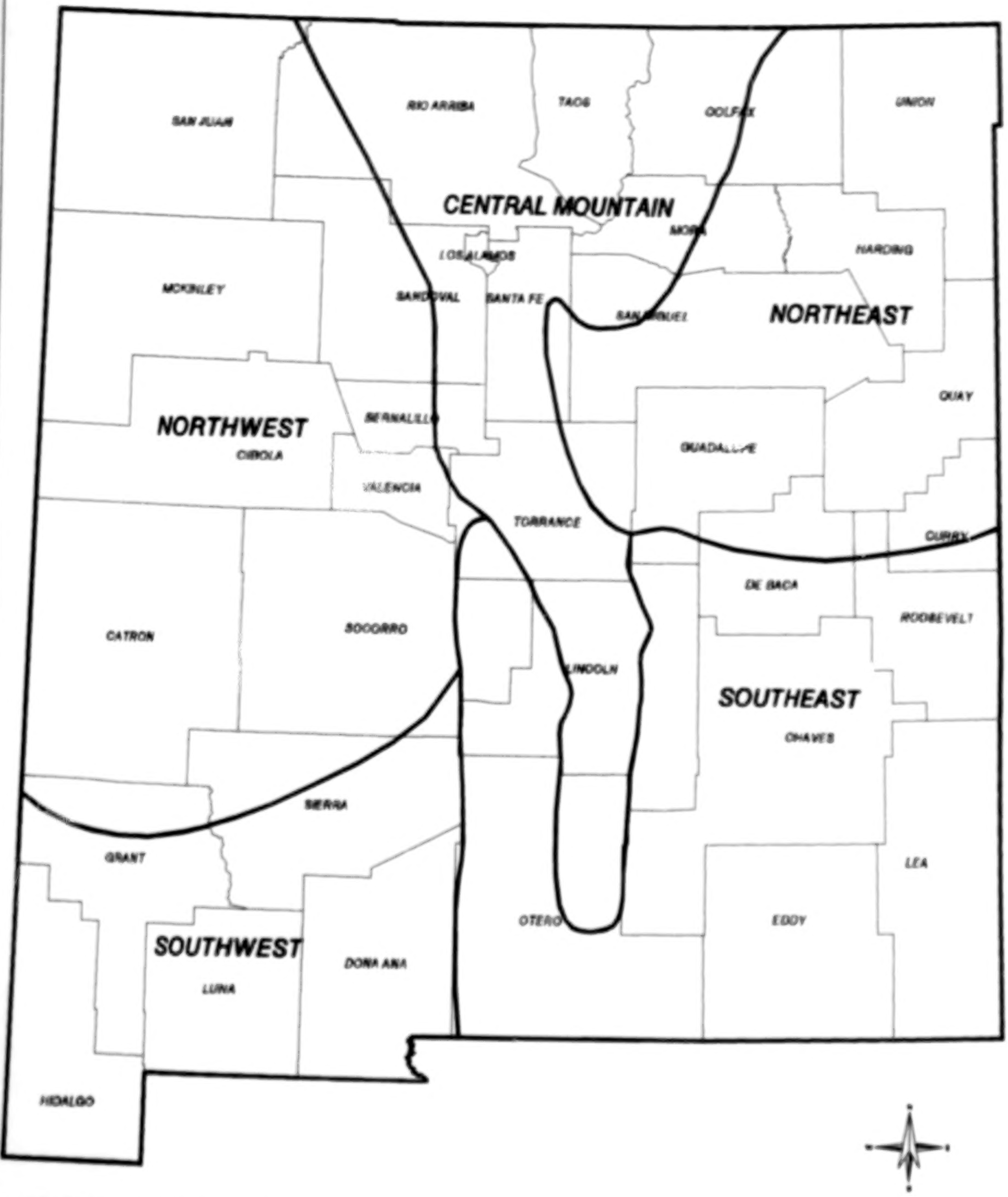
Map 4-1. Cow / Calf Ranching Areas in New Mexico



Produced by the New Mexico State Office Geographic Sciences Team,
Bureau of Land Management, August 09, 1996

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.

Source : New Mexico State University
Agricultural Experiment Station
College of Agriculture and Home Economics
Research Report 724:
"Range Livestock Cost and Return Estimate for New Mexico 1994"

NO ACTION (PRESENT MANAGEMENT) ALTERNATIVE

VEGETATION

Upland Vegetation

Under the No Action Alternative, management of vegetation on public lands within New Mexico would continue, consistent with existing RMP decisions and guidance. The rate of change due to management would continue as in the recent past. Vegetation in early seral stages would continue to be enhanced through the implementation of allotment activity plans and other activity-level plans (such as Habitat Management Plans or Coordinated Resource Management Plans). These plans would continue to be developed, and would continue to implement grazing systems, construction of range improvements to redistribute grazing pressure, and vegetation treatments to improve the ecological status of a particular allotment or pasture of a grazing allotment. In the short term, brush control would improve the ecological status on approximately 103,000 acres. In the long term, brush control would improve the ecological status on approximately 410,000 acres. Most of this effort would likely be aimed at the roughly 5 to 6 million acres in the mid- and late upper- early seral stages. In terms of vegetation types affected, most of the areas needing management are those that were formerly grasslands and are now dominated by desert scrub and juniper savannah types. Additionally, some shinnery oak control may be necessary to restore Great Plains tall- and mid- grass types, especially where needed for wildlife concerns such as the lesser prairie chicken. These areas are located in MLRAs 36, 42, and 70.

Riparian Vegetation

BLM would continue its management of riparian vegetation. Heightened public interest regarding riparian areas and endangered species issues would likely continue to push riparian area management into the forefront of BLM management activities. The result of this management priority would likely be renewed effort to restore, as much as possible, the 154 BLM riparian segments not in proper functioning condition. This would happen regardless of whether BLM enacts new rangeland health standards and grazing program guidelines, or which standards and guidelines BLM enacts. In the short term, improvement in functional condition is expected on approximately 20 riparian segments. In the long term, improvement in functional condition is expected on approximately 58 segments.

SOILS

Under current direction, with intense management, there would be a continued slow improvement over the long term in upland soil conditions where soils are more productive, such as Mollisols, Alfisols, and moderately fine textured Entisols. On poorer sites, and with less intensive management, there would be little or no change over the long term in the health of the upland soils except in response to drought or additional moisture conditions. No changes are expected for either case over the short term.

WATER

In the long term, continued implementation of BMPs to reduce NPS pollution and riparian area management would promote reductions in erosion and sediment production from public lands and slowly improve water quality. There would be less sediment, nutrients, salts, and biological contaminants in the water. The cycle of apparent arroyo filling is expected to continue, which would support riparian restoration, in turn improving water quality by acting as a filter for many pollutants.

While water quality affected by public land uses might improve, it is not expected that any of the water quality- limited stream reaches identified by the state would improve enough to meet state standards solely from this action. The impacts on those water quality-limited stream reaches from non-public land uses and sources of pollutants would also have to be reduced to help meet state standards.

GRAZING ADMINISTRATION

Each field office has an approved RMP which provides a framework for managing and allocating public land and resources over a 20-year period. The decisions of the RMP to improve rangelands and manage grazing use public lands were based on the principles of multiple use and sustained yield. Decisions include actions such as developing AMPs, constructing range improvements, manipulating vegetation, and developing grazing systems and other actions. Staff levels vary, as do priorities, funding, policy, and level of interest and

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involvement from government agencies and interest groups.

Under the No Action Alternative, RMP decisions would continue. Priorities have been established based on the selective management approach, using the "M", "I", and "C" classification categories. At this time 6.7 million acres falls into the "I" category. BLM has been successful in resolving issues and meeting goals under existing RMP decisions and guidance. Much can be attributed to the cooperation and stewardship of many grazing permittees. An average of two allotments-or 80,000 acres per year-have improved from category "I" to category "M" because of meeting allotment objectives. In the long term (over 20 years) 40 allotments are expected to inprove from the "I" to "M" category. This would reduce the acreage in the "I" category from 6.7 million acres to 5.1 million acres.

AMPs are expected to be developed on 60 to 100 allotments affecting 1.6 million acres over the next 20 years on "I" allotments. Three to five plans per year may be developed in the short term and approximately 60 to 100 plans over the long term (20 years). In developing AMPs through consultation, coordination, and cooperation with permittees, management actions regarding rest and deferment adjustment in livestock numbers, seasons of use, and range improvements are considered that best meet resource needs with a minimum of impact on the permittees. Monitoring efforts on these allotments are intensified.

Under the No Action Alternative, livestock use levels are expected to remain approximately at the seven-year average. However, fluctuation in use levels can be expected due to a variety of factors such as weather conditions and the price of livestock. Future use levels have been projected based on seven years of data (1990 to 1996) from the Grazing Authorization and Billing System. During the 1996 grazing year, 1,502,516 AUMs were authorized in New Mexico. The long-term projection, however, is expected to be around 1,696,981 AUMs-the average of the seven years. This is 166,222 AUMs more than were authorized in 1996.

An improvement in ecological condition can be expected in the long term. Vegetation treatments would improve the ecological status on 103,000 acres in the short term and on approximately 410,000 acres in the long term.

It is anticipated that the ecological condition of the rangelands would continue to improve, because of the improving soil and vegetation resource. This would also contribute to the improvement of the riparian areas by decreasing the speed of runoff and sediment.

Riparian and wetland habitat areas are given high priority for protection and improvement. Grazing management practices such as fencing and grazing systems are designed to meet or restore riparian and water quality needs in 154 riparian segments that are not in proper functioning condition. There would be segments of riparian habitat where current grazing practices would be adjusted to achieve riparian standards. In the short term, functional condition on 20 riparian segments would be expected to improve. In the long term, improvement in functional condition would be expected on 58 segments. Vegetation and litter in the riparian zone should respond and increase. The increase in canopy cover and litter should decrease the runoff and sediment, and improve the water quality.

WILD HORSES

Under the No Action Alternative, the wild horse herd will be managed as stated in the Socorro RMP. The 1985 Hedt Management Area Plan amendment reflects the new appropriate management level of 50 wild horses. Monitoring studies will be conducted annually to assess the forage condition and population. Based on the monitoring data, wild horses will be water trapped and removed from the area when necessary. The removed wild horses would be shipped to an adoption site or facility to await adoption.

The grazing system and water facilities developed through the AMP of 1968 have benefitted the wild horses. Pastures are grazed by cattle for 2 to 5 months and then rested from 7 to 10 months. Monitoring data show the allotment to be in fair to good condition with a static trend. Improvement in upland vegetation composition and cover should continue.

Approximately 10-20 wild horses are located in each pasture graze year-round. Horses are not rotated or moved from pasture to pasture as are cattle and therefore do not provide vegetation with complete rest.

Studies show a moderate to high use when wild horse numbers reach 50 and above. In the long term, the fair to good range condition should remain static or improve as long as the appropriate management level of 50 is maintained and balanced with grazing and other uses.

Under the No Action Alternative, the wild horses in the Farmington field office would be managed at the optimum level of 60 head. The Forest Service would determine the time and number of wild horses to remove if such action becomes necessary. Maintaining the herd level at its optimum numbers would help maintain the range in proper condition and balanced with other uses.

WILDLIFE

For all MLRAs, full implementation of existing RMPs under this alternative would have a slow, long-term benefit on most wildlife species.

36 - New Mexico and Arizona Plateaus and Mesas

Big Game

The development and implementation of AMPs identifying goals and objectives for vegetative land treatments and water developments would maintain or slightly improve wildlife habitat for big game species over the long term. Natural events (fire, flooding, etc.) That create a mosaic within the landscape and diversify the plant community would also benefit wildlife. Mule deer and elk are the primary big game species benefitting from these actions. A slight increase in the deer population would be expected through improving the quality and quantity of browse on upland sites, and creating new fawning areas. Elk are currently increasing in numbers; however, any increase would be controlled by the NMGF. The quality of habitat would maintain or slightly improve over the long term for riparian-dependent big game species (turkey, deer, and furbearers) due to the current emphasis on riparian management. However, due to the small percentage of riparian habitat located on public land and other limiting factors that affect big game populations, no measurable increase in populations is expected.

Off-highway vehicle use can potentially increase the number of roads on public land, resulting in degradation of big game habitat and increasing wildlife harassment and displacement. Under current management, road closures are slowly being implemented, but not to the degree necessary to reduce off-highway vehicle impacts.

Upland Game and Nongame

Upland sites would gradually improve over the long-term, through land treatments and proper grazing practices, resulting in a benefit for some upland wildlife species. The continued construction of water developments would favor upland game bird species.

Again, current management would slightly improve upland and nongame habitat conditions in the long term, particularly in areas where vegetative treatments are proposed and for those species dependent upon riparian areas that are in an upward trend in condition.

Waterfowl

Current waterfowl management is closely associated with riparian management, and would improve over the long term, with current BLM's emphasis on riparian management.

Fisheries

Habitat quality for resident fisheries would generally change in response to the changes in overall riparian and aquatic habitats. Public land-resident fisheries habitat would be improved over the long term.

37 - San Juan River Valley Mesas and Plateaus

Under current management, vegetative treatments (chemical and fire) would change the overall plant composition within the sagebrush and desert shrub community, benefitting local big game populations. Implementation of range inprovements defined in the RMPs and AMPs would slowly improve antelope and mule deer habitat through increasing water distribution and improving forage availability and quality.

The quality of habitat would maintain or slightly improve over the long term for riparian-dependent big game species (deer, furbearers, etc.) due to the current emphasis on riparian management. However, because of the small percentage of riparian habitat located on public land and other limiting factors that affect big game populations, little increase in populations is expected.

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Allowing public access, while controlling OHV use and protecting wildlife habitat, is a major concern for most field offices. Off-highway vehicle use can potentially increase the number of roads on public land, resulting in degradation of big game habitat and increasing wildlife harassment and displacement. Under current management, road closures are slowly being implemented, but not to the degree necessary to reduce off-highway vehicle impacts.

Upland Game and Nongame

Upland sites would gradually improve over the long term, through land treatments and proper grazing practices, resulting in a benefit for some upland wildlife species. The continued construction of water developments would favor upland game bird species.

Again, current management would slightly improve upland and nongame habitat conditions in the long term, particularly in areas where vegetative treatments are proposed, and for those species dependent upon riparian areas that are in an upward trend in condition.

Special management for raptor nesting areas would continue. Small changes in the overall landscape, while still protecting nest sites, would increase the prey base for raptors.

Waterfowl

Current waterfowl management is closely associated with riparian management, and would slightly improve over the long term with BLM's current emphasis on riparian management.

Limiting factors associated with waterfowl management are the lack of functioning riparian areas, agricultural fields and the conversion of grain crops to cotton and chile located on private lands. Waterfowl primarily migrate into the state during the winter months through the central flyway.

Fisheries

Habitat quality for resident fisheries would generally change in response to the changes in overall riparian and aquatic habitats. Public land-resident fisheries habitat would be improved over the long term.

39 - Arizona and New Mexico Mountains

Big Game

The BLM manages very little public land of this type. However, there are several areas having AMPs identifying wildlife goals and objectives and allowing vegetative land treatments and water developments. These projects, along with controlled grazing, would maintain slightly improve wildlife habitat for big game species over the long term. The southwestern part of the state has a very active fire season. These natural events can be beneficial to resident elk herds by creating open meadow areas and increasing the amount of forage.

Upland Game and Nongame

Upland sites would gradually improve over the long term, from land treatments and proper grazing practices; resulting in a benefit for most upland and nongame wildlife species.

Waterfowl

Waterfowl habitat would improve with respect to riparian improvements. Waterfowl and riparian habitat improvements would gradually be enhanced over the long term. However, since the majority of waterfowl are migratory, no measurable change in populations are anticipated.

Fisheries

Habitat quality for resident fisheries would generally change in response to the changes in overall riparian and aquatic habitats. Public land-resident fisheries habitat over the long term would be improved.

41 - Southeastern Arizona Basin and Range

A small percentage of this MLRA exists on BLM lands and the Coues' whitetail deer occupies this corner of southwestern New Mexico. Over time, current management would continue to maintain or improve wildlife habitat.

42 - Southern Desertic Basins, Plains, and Mountains

Maintenance of desert ecosystems is very critical, yet difficult to manage, due to climatic conditions and the recent expansion of human activities that can potentially alter habitat components critical to some desert species.

Big Game

The development and implementation of AMPs that identify management objectives and provide forage plant needs, vegetative land treatments, water development, and cooperative management efforts would continue to slowly improve big game habitat over the long term. Natural events (fire, flooding etc.) that created a mosaic within the landscape and diversify the plant community would also benefit wildlife. A slight increase in the deer population would be expected because of improving the quality and quantity of browse on upland sites, and creating new fawning areas. Pronghorn antelope populations are expected to increase over the long term due to improved habitat conditions and transplants. Habitat conditions would improve over the long term due to improved ecological conditions and movement patterns. Antelope transplants would be expected to continue in cooperation with the NMDGF and other land owners.

Competition for food and space between mule deer and the Iranian ibex would continue under current management practices. Oryx would continue to move off the White Sands Missile Range and may potentially displace mule deer and antelope because of their size and aggressive behavioral patterns.

The quality of habitat would maintain or slightly improve over a long period for riparian-dependent big game species (turkey, deer, and furbearers) due to the current emphasis on riparian management. However, due to the small percentage of riparian habitat located on public land and other limiting factors that affect big game populations, no measurable increase in populations is expected.

Upland Game and Nongame Species

Upland sites would gradually improve over the long term through land treatments and proper grazing practices, resulting in a benefit for scaled quail, Gambel's quail and dove populations. The continued construction of water developments would favor upland game bird species.

Waterfowl

Limiting factors associated with waterfowl management are the lack of functioning riparian areas, agricultural fields, and the conversion of grain crops to cotton and chile located on private lands within the Rio Grande and Pecos Valley areas. Waterfowl primarily migrate into the state during the winter months through the central flyway. Current waterfowl management is closely associated with riparian management, and would slightly improve over the long term with current BLM's emphasis on riparian management.

Fisheries

Habitat quality for resident fisheries would generally change in response to the changes in overall riparian and aquatic habitats. Public land-resident fisheries habitat would be improved over the long term.

48 - Southern Rocky Mountains

The BLM manages very little public land within this MLRA. However, there are several areas that have management plans identifying wildlife goals and objectives and allowing vegetative land treatments and water developments. These projects, along with controlled grazing, would maintain or slightly improve wildlife habitat for big game species over the long term.

51 - High Intermountain Valleys

Big Game

Rocky Mountain elk would continue to be a key wildlife species within the Taos field office. Critical winter range would be improved through prescribed fires in the San Antonio, Pot, and Montoso mountains and Habitat Management Plans that outline goals and objectives for big game species. Pronghorn antelope exist throughout these Special Management Areas and would benefit along with the elk from these goals and objectives.

Upland Game and Nongame

Upland sites would gradually improve over the long-term, through land treatments and proper grazing practices, resulting in a benefit for scaled quail, mourning dove, Merriam's turkey, numerous raptors and migratory bird populations. The continued construction of water developments would favor upland game bird species.

Waterfowl

The limiting factors associated with waterfowl management are the lack of functioning riparian areas. Waterfowl primarily migrate into the state during the winter months through the central flyway. Current waterfowl management is closely associated with riparian management and would slightly improve over the long term with BLM's current emphasis on riparian management.

Fisheries

Habitat quality for resident fisheries would generally change in response to the changes in overall riparian and aquatic habitats. Public land-resident fisheries habitat would be improved.

70 - Pecos/Canadian Plains and Valleys

Big Game

Vegetative land treatments, increased water developments, and cooperative management efforts would continue to improve big game habitat. Mule deer are continuing to spread throughout the MLRA, but overall populations are declining in this MLRA and statewide. The development and implementation of AMPs that identify management objectives and provide forage plant needs, vegetative land treatments, and water developments would maintain or slightly improve wildlife habitat for big game species over the long term. Natural events (fire, flooding, etc.) That created a mosaic within the landscape and diversify the plant community would also benefit wildlife. A slight increase in the deer population would be expected. Due to improving the quality and quantity of browse on upland sites, and creating new fawning areas. Pronghorn antelope populations are expected to increase over the long term due to improved habitat conditions and transplants. Habitat conditions would improve over the long term due to improved ecological conditions and movement patterns. Antelope transplants would be expected to continue in cooperation with the NMDGF and landowners.

Upland Game and Nongame

Upland sites would gradually improve over the longterm through land treatments and proper grazing practices outlined in Habitat Management Plans and AMPs, resulting in a benefit for scaled quail and dove populations. The continued construction of water developments would favor upland game bird species. With the current regional emphasis on the decline of prairie chicken populations, current grazing management practices would need to be amended to address special habitat requirements needed for sustainable populations.

Waterfowl/Fisheries

Habitat quality for resident fisheries and waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Public land-resident fisheries habitat would be improved over the long term.

77 - Southern High Plains

Big Game

The BLM manages very little public land within this MLRA. However, current RMP decisions would improve wildlife habitat by identifying wildlife goals and objectives and allowing vegetative land treatments and water developments.

Upland Game and Nongame

Upland sites would gradually improve over the long term, through land treatments and proper grazing practices, resulting in a benefit for most upland and nongame wildlife species.

Waterfowl

Waterfowl habitat would improve with respect to riparian improvements. Waterfowl and riparian habitat improvements would gradually be enhanced over the long term. However, since the majority of waterfowl are migratory, no change in populations is anticipated.

SPECIAL STATUS SPECIES

Under the No Action Alternative, management of special status species on public lands within New Mexico would continue consistent with existing RMP decisions and guidance (including the results of the statewide Section 7 consultations for each RMP). The rate of change due to management would continue as in the recent past. Special status species management would continue through the implementation of AMPs and other activity level plans (such as Herd Management Area Plans and Coordinated Resource Management Plans). These plans would continue to implement grazing systems, construction of range improvements to redistribute grazing pressure, and vegetation treatments to improve the ecological status of a particular allotment or pasture of a grazing allotment.

In the short term, brush control would improve the ecological status on approximately 103,000 acres. In the long term, brush control would improve the ecological status on approximately 410,000 acres. Most of this effort would likely be aimed at improving the roughly 5 to 6 million acres in midseral and upper early-seral areas.. In terms of vegetation types affected, most of the areas needing management are those areas that were formerly grasslands and are now dominated by desert scrub and juniper savannah types of the woodland biome in MLRAs 36, 42, and 70. Some shinnery oak control may be necessary to restore Great Plains tall- and mid-grass types where needed for wildlife concerns such as the lesser prairie chicken. These activities would benefit many of the 55 species that occur within the woodland and desert biomes. Of concern when implementing livestock grazing practices is that the approximately 4,285,000 acres in areas of late seral and PNC ecological status not decline due to redistribution of grazing patterns. These areas, in many cases, provide suitable habitat to support special status species with late seral habitat requirements. Conversely, brush control activities may have only partial benefit to special status species, where the species require late-seral to PNC habitat conditions, and the improvement capability is only to mid-seral due to past erosion and soil loss.

The BLM's priority in the near future would likely be continued restoration of riparian habitats. In the short term, improvement in functional condition is expected on approximately 20 riparian segments. In the long term, improvement in functional condition is expected on approximately 58 segments. This will benefit many of the 76 species associated with these habitats, including the southwestern willow flycatcher. Improvement of many areas would be limited by the fragmented distribution of BLM riparian areas and the lack of coordinated watershed management efforts.

RECREATION

Recreational visitor use would continue to increase, particularly in areas where urban visitors recreate. Developed recreation sites would be especially have increased use. The recreational use levels are not expected to be impacted by rangeland management practices.

It is expected that the present conflicts between livestock use and the developed recreational area at the Wild Rivers Recreation Area would be resolved over the next five years. As additional recreational sites are developed, livestock are expected to be excluded.

The BLM is expected to resolve livestock grazing conflicts on riparian areas. In the long term, an additional 58 riparian segments are expected to improve in condition. This would improve the quality of visits for recreationalists on the public lands.

The 1,600,000 acres within Category "I" allotments would improve to the "M" category, improving the quality of the visit for recreational visitors.

WILDERNESS

Under the No Action Alternative the existing situation would continue in wilderness areas and wilderness study areas. Livestock grazing practices would be constrained by existing wilderness study area management guidelines. Range improvements to facilitate livestock grazing management would be authorized only where they are consistent with the wilderness area and wilderness study area management guidelines. Existing resource conditions and trends would be expected to remain the same.

CULTURAL RESOURCES

Under existing management, cultural resources are protected by law from the effects of new development of livestock facilities; however, loss of, and damage to, cultural resources continues to occur due to increased

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public access, erosion, and cattle trampling resulting from livestock grazing and development of associated facilities. Efforts by the BLM continue in cooperation with permittees and lessees to improve cattle distribution, thereby reducing the intensity of impacts in localized areas.

PALEONTOLOGY

Under present management, paleontological resources are protected by law from the effects of new development; however, loss of, and damage to, paleontological resources continues to occur due to increased public access, erosion, and cattle trampling. Efforts by the BLM continue in cooperation with permittees and lessees to improve cattle distribution, thereby reducing the intensity of impacts in localized areas.

REALTY/LAND USE

Applications for all land and realty actions are considered by BLM on a case-by-case basis. The majority of realty actions require short-term use of the lands with long-term productivity being restored upon rehabilitation of disturbed areas (USDI, BLM, Roswell RMP, 1994). However, there are permitted actions such as access roads, which result in disturbances over the long term, decreasing the productivity of that area for the life of that project. Each project proposal contains mitigation measures to minimize or avoid impacts. The requirements for reclamation and rehabilitation are covered in project components along with stipulations required by BLM. This process mitigates or avoids impacts while allowing for a variety of uses on public lands.

Local areas are impacted by land and realty activities creating both short- and long-term surface disturbance by reducing vegetative cover and forage, increasing erosion or sediment load, degrading wildlife habitat, and increasing the potential for the introduction or spread of noxious weeds. Stipulations, if complied with and successful, would mitigate impacts on a local basis by reducing soil erosion and sediment load, restoring ground cover, restoring diversity of plant species, protecting threatened and endangered or special status species and their habitats, minimizing the introduction or spread of noxious weeds, and protecting important cultural or historic resources. The impacts associated with land and realty surface disturbing activities would continue under the No Action Alternative.

MINERAL RESOURCES

The primary objective of the BLM minerals program is to provide consumptive use of the resource as needed by a productive society. The development and sale of the various mineral resources also provides a source of income for the mineral owner and the developer. Any impact that may affect availability of mineral resources, impede their development, or make development less profitable, would be a concern to anyone who uses mineral products or derives their income from the development or sale of mineral production.

Under the No Action Alternative, public lands currently open to mineral entry or mineral leasing would remain open. Minerals resources would be managed consistent with existing laws and regulations governing their development. Statutory rights of current mineral lessees, claimants, and permit holders would not be affected. Developers of public minerals would continue to be subject to standards that reduce soil erosion, protect fresh water supplies, reduce vegetative disturbance offsite, and safeguard wildlife populations. As provided for in existing mineral development laws and regulations, variations in management style, environmental situations, and public preferences would continue to affect the cost and timing of development. Specific development operations may even be denied under these current conditions.

Saleable Minerals

If no public land health standards are implemented, no additional impacts on the development, sale, and use of public mineral materials would be created. The development scenarios described in current RMPs would continue unchanged. Under the existing mineral material regulations found in 43 CFR Part 3600.0-4, the BLM has discretion to deny the digging and development of new sites. Under the No Action Alternative, the discretion to deny use of mineral materials would remain available; however, no mineral operation would be denied due to the application of a land health standard. By not issuing land health standards, there would be no additional criteria on which a BLM Authorized Officer might deny mineral material use permits. The use of federal mineral material pits and quarries would continue to be subject to existing standards that protect the environment.

Locatable Minerals

The management of mining claims is subject to the Mining Law of 1872. Under this statute, the non-mechanized casual use of a claim, and mining operations disturbing less than five acres per year, are not subject to a BLM authorization. Most of the claims on public land in New Mexico are mined by this type of operation; therefore, no restrictive conditions and impacts would result from any of the alternatives. Under the No Action Alternative, reclamation standards and requirements for the larger mine plans would not be changed. The mines permitted by BLM would continue to be subject to current environmental degradation standards. There would be no additional restrictive conditions applied to future mine plan permits. In addition to these federal requirements, operations on mining claims are subject to the New Mexico Mining Act of 1993, which sets similar or stricter standards for environmental protection and the reclamation of mined lands. There would be no need to alter the meaning or the determination of unnecessary and undue degradation in the management of locatable and salable mineral resources.

Leasable Minerals

The leasing of mineral resources on public land would not change under any of the alternatives. Under the No Action Alternative, the environmental standards imposed on the development of leasable minerals would not be reduced or made more restrictive. Leasable minerals are currently held to a high environmental protection standard. These standards are applied at the permitting stage to minimize environmental damage and preserve natural conditions during development operations. They can be found in such documents as *Oil and Gas Surface Operating Standards* (the Gold Book), right-of-way handbooks, and RMPs. Strict environmental standards for location and mining of coal leases are found in the Federal Coal Leasing Amendments Act of 1976 and Surface Mining Control and Reclamation Act of 1977. The No Action Alternative would result in no change to the reasonable foreseeable development scenarios for oil and gas leases that are forecast in the current RMPs. No delay or relocation of oil and gas permits would occur due to the potential application of standards.

NATIVE AMERICAN CULTURAL ISSUES

Native American concerns would continue to be protected under the law as stated in Chapter 3.

ECONOMIC CONDITIONS

Current conditions, as described in Chapter 3, are expected to continue.

HUMAN DIMENSION

Current conditions, as described in Chapter 3, are expected to continue.

RAC ALTERNATIVE (PROPOSED ACTION)

VEGETATION

Upland Vegetation

Under the RAC Alternative hereafter the Proposed Action, the focus of management and the application of grazing guidelines would occur on public lands not meeting the standard due to grazing. Management changes would include more water, fencing, land treatments, and possible deferment on areas not meeting the standard. In the short term, little improvement would be expected. However, in the long term, measurable improvement in vegetative cover and composition would be expected due to grazing management practices. Additionally, vegetation would be enhanced through the use of mechanical and chemical manipulations in both the short and long term. These improvements would occur mostly within the desert and woodland biomes in MLRAs 36, 42, and 70.

Riparian Vegetation

Under the Proposed Action, riparian communities and vegetation on 112 riparian segments classified as nonfunctional and functional at risk with a downward trend or where the trend is not apparent (stable), would not meet the standards. These areas are affected, at least in part, by grazing activities. Management efforts in the short term would improve 16 segments. Seven of the segments are projected to improve to proper functioning condition. In the long term, 52 segments are projected to improve. Of this total, 25 areas would improve to proper functioning condition. Improvement of many areas is limited by the fragmented distribution of BLM riparian areas and the lack of coordinated watershed management efforts.

SOILS

With intense management under the Proposed Action, there would be a continued slow improvement over the long term in upland soil conditions where soils are more productive, such as Mollisols, Alfisols, and moderately fine textured Entisols. On poorer sites and with less intensive management there would be little or no change over the long term in the health of the upland soils except in response to drought or additional moisture conditions. No changes are expected for either case over the short term. There would be more overall improvement than either the No Action or County alternatives due to implementation of grazing management guidelines on more acres, than for those alternatives. Over half of the uplands not meeting the standard for this alternative are in MLRA 42; however, the soil response to management in this MLRA would be slow. More profound response would come from the better sites such as those in MLRA 36 (norther part), 39, 41, 48A, 70 (northern part), and the gently sloping uplands of MLRA 77.

WATER

In the long term, continued implementation of BMPs to reduce NPS pollution and riparian area management would promote reductions in erosion and sediment production from public lands and slowly improve water quality. There would be less sediment, nutrients, salts, and biological contaminants in the water. The cycle of apparent arroyo filling is expected to continue which would support riparian restoration, in turn improving water quality by acting as a filter for many pollutants.

While water quality affected by public land uses might improve, it is not expected that any of the water quality-limited stream reaches identified by the state would improve enough to meet state standards solely from this alternative. The impacts on those water quality-limited stream reaches from non-public land uses and sources of pollutants would also have to be reduced to help meet state standards.

GRAZING ADMINISTRATION

Under the Proposed Action, livestock use levels are expected to remain approximately at the seven-year average over the short term, similar to the No Action Alternative. Adjustments in livestock numbers are expected to be upward on some allotments and downward on others. Adjustments are not expected to be large, either upward or downward because in general, current permits and leases are consistent with grazing capacities established through BLMs rangeland monitoring program. However, fluctuation in use levels can be expected due to a variety of factors such as weather conditions and the price of livestock. As forage conditions and lands improve in health and begin to properly function, increases in livestock use can be expected. The long-term AUM projection

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statewide is expected to be around preference (1,968,341 AUMs).

Implementing the guidelines would be similar to BLM's the No Action Alternative. The livestock management practices may include deferment, adjusting livestock numbers, changing season of use, modifying or developing range improvements, and conducting vegetative land treatments. There would be segments of riparian habitat where current grazing practices would be adjusted to achieve the riparian standard.

Under this alternative, 428 permittees could be affected. Smaller ranching operations that have to make modifications in use or management would be affected more than larger ranching operations because smaller ranchers have fewer resources and flexibility. Permittees most affected by the guidelines would be those with small one-pasture allotments where it may be necessary to defer grazing during critical periods of plant growth or regrowth. As a result, the permittee may be burdened financially by having to lease private pasture, improve the private lands, add fencing to create an additional pasture or partner with another allotment. There are also the additional costs associated with the handling of livestock for gathering and transporting.

WILD HORSES

Impacts ON the Socorro wild horse herd from the implementation of the Proposed Action would be similar to the No Action Alternative, with the exception that the Socorro RMP decisions would be in conformance with the standard for rangeland health. Based on monitoring data, the area is in fair to good condition with a static trend and meets the standard. The existing resource condition would improve as in the No Action Alternative as long as the appropriate management level of 50 head is maintained and balanced with livestock grazing and other uses.

Impacts on the Farmington herd would be similar to the No Action Alternative.

WILDLIFE

Implementing the proposed standards and guidelines under the Proposed Action would benefit wildlife in the short and long term in both upland and riparian areas. The improvement of riparian habitats currently functioning at risk with a downward trend would benefit wildlife, since these areas are the most diverse and productive areas. The construction of livestock management facilities outside of the riparian/wetland area would protect and improve riparian and wildlife habitats. Over the long term, standards and guidelines would help ensure that site-specific, as well as landscape-level habitat needs are considered when developing AMPs. The proposed standards and guidelines would allow for a slight increase in actual AUMs over the long term, but would consider and protect critical wildlife resources. Livestock would be used as a management tool to help restore and maintain sustainable habitats, increase biological diversity and vegetative productivity, and promote proper functioning uplands and riparian areas.

The field offices have identified oil and gas leasing development and rehabilitation, Rights-of-ways and off-highway vehicle and other uses as other causes for not meeting the biotic standards. These activities and associated decisions would not be resolved under the proposed grazing guidelines, but RMP decisions would be commensurate with public health standards, thereby ensuring wildlife management issues and concerns would be recognized and evaluated to maintain and protect wildlife habitat.

36 - New Mexico and Arizona Plateaus and Mesas

Long-term benefits to big game would occur under the Proposed Action by utilizing restrictive guidelines on livestock grazing, and improving upland habitat currently in poor condition or not meeting the standard due to grazing practices. Mule deer and elk are the primary big game species benefitting from these actions. There would be an increase in the deer population through improving the quality and quantity of browse on upland sites, and creating new fawning areas. Predation can reduce fawn survival in nutritionally healthy deer populations. Elk are currently increasing in numbers, but would be controlled by the NMGF.

The quality of habitat would improve over the long term for riparian-dependent big game species (turkey, deer, and furbearers) due to the proposed emphasis on riparian management. However, due to other limiting factors (drought) and hunting regulations, no measurable increase in populations are expected.

Allowing public access while controlling off-highway vehicle use and protecting wildlife habitat is a major concern for most field offices. Off-highway vehicle use can potentially increase the number of roads on public land, degrading big game habitat and increasing wildlife harassment and displacement. Under this alternative and associated standards for erosion and wildlife habitat, road closures would be implemented.

Upland Game and Nongame

Upland sites would improve over the long term more rapidly from land treatments and proper grazing practices, resulting in benefits for most upland wildlife species. The continued construction of water developments would favor upland game bird species.

Waterfowl/Fisheries

Habitat quality for resident fisheries and waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Public land-resident fisheries habitat over the long term would be improved.

37 - San Juan River Valley Mesas and Plateaus

Long-term benefits to big game would occur from the Proposed Action by utilizing restrictive guidelines on livestock grazing, and improving upland habitat currently in poor condition or not meeting the standards due to grazing practices.

The quality of habitat would improve over the long term for riparian-dependent big game species (deer, furbearers, etc.) due to the emphasis on riparian management. However, due to the small percentage of riparian habitat located on public land and other limiting factors that affect big game populations, no measurable increase in populations are expected.

Allowing public access while controlling off-highway vehicle use and protecting wildlife habitat is a major concern for most field offices. Off-highway vehicle use could potentially increase the number of roads on public land, resulting in degradation of big game habitat and increasing wildlife harassment and displacement. Under this alternative and associated standards for erosion and wildlife habitat, road closures would be implemented.

Upland Game and Nongame

Upland sites would improve over the long term due to land treatments and proper grazing practices, resulting in benefits for most upland wildlife species. The continued construction of water developments would favor upland game bird species.

Special management for raptor nesting areas would continue. Small changes in the overall landscape while still protecting nests sites would increase the prey base for raptors.

Waterfowl/Fisheries

Habitat quality for resident fisheries and waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Public land-resident fisheries habitat over the long term would be improved.

39 - Arizona and New Mexico Mountains

Big Game

The BLM manages very little public land within this MLRA. Under this alternative, there are several areas where the standards and guidelines would improve wildlife habitat. Upland improvement projects along with controlled grazing would improve wildlife habitat for big game species over the long term. The southwestern part of the state has numerous natural fire occurrences. These natural events can be beneficial to resident elk herds by creating open meadow areas and increasing the amount of forage.

Upland Game and Nongame

Upland sites would improve over the long term from land treatments and proper grazing practices, resulting in a benefit for most upland and nongame wildlife species.

Waterfowl/Fisheries

Habitat quality for resident fisheries and waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Public land-resident fisheries habitat over the long term would be improved.

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41 - Southeastern Arizona Basin and Range

A small percentage of this MLRA exists on BLM lands. Upland habitat would be improved under the Proposed Action, resulting in improving Coues' whitetail deer habitat in the Southwestern corner of New Mexico.

42 - Southern Desertic Basins, Plains, and Mountains

Long-term benefits to big game would occur from this alternative by utilizing restrictive guidelines on livestock grazing, and improving upland habitat currently in poor condition or not meeting the standards due to grazing practices.

The Proposed Action would rectify historic land use practices that have caused problems such as the dewatering of streams and springs and altering or displacing big game species. Implementation of proper grazing practices, vegetative land treatments, increased water developments, and cooperative management efforts would have long-term benefits to big game habitat. Natural events (fire, flooding, etc.) that create a mosaic within the landscape and diversify the plant community would also benefit wildlife.

There would be a slight increase in the deer population through improving the quality and quantity of browse on upland sites, and creating new fawning areas. Pronghorn antelope populations are expected to increase over the long term due to improved habitat conditions and transplants. Habitat conditions would improve over the long term due to improved ecological conditions and movement patterns. Antelope transplants would be expected to continue in cooperation with the NMDGF and other land owners.

Competition for food and space between mule deer and the Iranian ibex would continue under this alternative. Oryx would continue to move off the White Sands Missile Range and may potentially displace mule deer and antelope because of their size and aggressive behavioral patterns.

The quality of habitat would improve over the long term for riparian-dependent big game species (turkey, deer, and furbearers) due to emphasis on riparian management. However, because of the small percentage of riparian habitat located on public land and other limiting factors that affect big game populations, no change in populations can be expected.

Upland Game and Nongame

Upland sites would gradually improve in the short term and fully recover in the long term, from land treatments and proper grazing practices, resulting in a benefit for scaled quail, Gambel's quail, and dove populations. The continued construction of water developments would benefit upland game bird species.

Waterfowl/Fisheries

Habitat quality for resident fisheries and waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Public land-resident fisheries habitat over the long term would be improved.

48 - Southern Rocky Mountains

A small percentage of this MLRA exists on BLM lands. Upland habitat would improve under the Proposed Action, resulting in improvement of some wildlife habitat within the MLRA.

51 - High Intermountain Valleys

Big Game

Long-term benefits to big game would occur from the Proposed Action by utilizing restrictive guidelines on livestock grazing, and improving upland habitat currently in poor condition or not meeting the biotic standard due to grazing practices. Rocky Mountain elk would continue to be a key wildlife species within the Taos field office. Critical winter range would be improved through implementation of the proposed standards and guidelines.

Upland game and Nongame

Upland sites would improve over the long term from land treatments and proper grazing practices, benefitting scaled quail, mourning dove, Merriam's turkey, and numerous raptors and migratory bird populations. The continued construction of water developments would benefit upland game bird species.

Waterfowl/Fisheries

Habitat quality for resident fisheries and waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Public land-resident fisheries habitat over the long term would be improved.

70 - Pecos/Canadian Plains and Valleys

Big Game

Short- and long-term benefits to big game would result from the Proposed Action through utilizing restrictive guidelines on livestock grazing, and improving upland habitat currently in poor condition or not meeting the biotic standard due to grazing practices. Implementation of guidelines that identify proper grazing practices, vegetative land treatments, and water developments would improve wildlife habitat for big game species over the long term. Natural events (fire, flooding etc.) that create a mosaic within the landscape and diversify the plant community would also benefit wildlife. There would be a slight increase in the deer population through improving the quality and quantity of browse on upland sites, and creating new fawning areas. Pronghorn antelope populations are expected to increase over the long term due to improved habitat conditions and transplants. Habitat conditions would improve over the long term due to improved ecological conditions and movement patterns. Antelope transplants would be expected to continue in cooperation with the NMDGF and land owners.

Upland Game and Nongame

Upland sites would improve over the long term from land treatments and proper grazing practices, benefitting scaled and bobwhite quail, mourning dove and numerous raptors, and migratory bird populations. The continued construction of water developments would benefit upland game bird species.

With the current regional emphasis on the decline of lesser prairie chicken populations, the Proposed Action would have short and long term benefits on approximately 24,000 acres of prairie chicken habitat that would address special habitat requirements.

Waterfowl/Fisheries

Habitat quality for resident fisheries and waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Public-land resident fisheries habitat over the long term would be improved.

77 - Southern High Plains

Big Game

The BLM manages very little public land within this MLRA; however, the Proposed Action would improve wildlife habitat by establishing livestock management guidelines that would be compatible with wildlife resources.

Upland Game and Nongame

Upland sites would improve over the long term from land treatments and proper grazing practices, benefitting most upland and nongame wildlife species.

Waterfowl/Fisheries

Habitat quality for waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Public land-resident fisheries habitat over the long term would be improved.

SPECIAL STATUS SPECIES

Under the Proposed Action, the focus of management and application of grazing guidelines would occur on land not meeting the biotic standard, and public land not meeting the upland standard, due to current grazing practices. It is more efficient to manage an entire pasture than to manage a small portion of a pasture. Managing the smaller portion would likely incur large costs for fencing, establishment of water sources, and other management facilities. These areas are contained primarily within the desert biome of MLRAs 36, 37 and 42 and the grassland biome of MLRA 70. There would be benefits to a portion of the 95 species occurring in the improved areas of the desert and grassland biomes managed under this alternative. This alternative would project threatened and endangered

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species by making sure that the approximately 4,285,000 acres in areas of late-seral and PNC ecological status not decline in ecological condition. These areas, in many cases, provide suitable habitat to support special status species with late-seral habitat requirements.

The greatest benefits to special status species resulting from this alternative would be the improvement of riparian conditions on 16 riparian segments in the short term and 52 riparian segments in the long term. Many of the 76 special status species associated with public land riparian areas and their aquatic systems would benefit from improvements in riparian condition under this alternative.

Areas past the threshold of improvement have lost the capability to recover toward PNC within the long term of this analysis, even in the absence of grazing. In some cases, the PNC has shifted toward a different community. Even with chemical or mechanical manipulation, these areas may never reestablish a community like the lost native community. This is due to the change in ecosystem functionality occurring with the combined impacts of soil loss and vegetative community shiftsassociated with major disruptions caused by past land use practices and climatic change. Examples of these are former desert grasslands which are now mesquite sand dunes and creosote bush/desert pavement communities of the Chihuahuan Desert MLRA 42. Special status species that formerly used these areas would have differing abilities to recolonize these habitats as the relative condition improves with subsequent management. Some species, such as obligate grassland species like Baird's sparrow, may never be able to return to former habitats. Other areas, such as the shinnery oak/dunes areas of MLRAs 42, and 70 retain a profound capability to return to previous grassland dominance, and the ability to support grassland species, such as the lesser prairie chicken.

RECREATION

Recreational visitor use would continue to increase, particularly in areas where urban visitors recreate. Developed recreation sites would be especially subject to increased use. The recreational use levels on a statewide basis are not expected to be impacted by the standards or the livestock grazing guidelines. The Proposed Action would provide for increased management of off-highway vehicle use on 4,600 acres in MLRA 36 and 7,300 acres in MLRA 42. Although these areas may be important to off-highway vehicle visitors frequenting them, on a statewide basis they represent a small percent of the total public land acreage.

Increased recreation supervision would occur on 10,600 acres in MLRA 36, 500 acres in MLRA 37, and 400 acres in MLRA 42, where recreational activities are keeping the area from meeting the upland standard.

Considering that there may be overlap on many of the acres identified as having recreation conflicts with the standards, the additional restrictions would occur on less than 11,100 acres-a minor impact to the recreational use of the public lands on a statewide basis.

It is expected that the present conflict between livestock use and the developed recreational area at the Wild Rivers Recreation Area would be resolved over the next five years. As additional recreational sites are developed, livestock are expected to be excluded.

The BLM would be expected to resolve livestock grazing conflicts on riparian areas. In the long term, an additional 52 riparian segments are expected to improve in condition, improving quality of visits for recreationalists on the public lands.

Not all of the acres are failing to meet the standards due to livestock grazing. However, many acres are expected to have an improved quality of visits for recreationists due to the improved native vegetation and animal communities.

WILDERNESS

Where sites not meeting the standard are included in WAs or WSAs, they would be expected to be a high priority for improved management. The review of WAs and WSAs to determine if they meet the standards should help determine what management changes could be needed.

However, in WAs and WSAs, the Wilderness Act and BLM management guidelines for these areas would limit some of the tools available for management. For example, the range improvements that are normally applied to support improved livestock grazing management and land treatment techniques may not be permitted in WAs and WSAs. However, if the WAs and WSAs meet the standards, there would be no impact wilderness values.

CULTURAL RESOURCES

Under the Proposed Action damage to or loss of archaeological sites in both upland and riparian areas due to erosion would be reduced, commensurate with reductions in erosion. Location of future livestock facilities away from riparian-wetland areas may reduce future damage to archaeological sites, often concentrated in these areas; however, facilities already located near these areas would continue to contribute to archaeological site damage.

PALEONTOLOGY

Under the Proposed Action damage to or loss of paleontological sites in both upland and riparian areas due to erosion would be reduced, commensurate with reductions in erosion.

REALTY/LAND USE

Local areas are impacted by land and realty activities creating both short- and long-term surface disturbances by reducing vegetative cover and forage, increasing erosion or sediment load, degrading wildlife habitat, and increasing the potential for the introduction or spread of noxious weeds. Stipulations, if complied with and successful, would mitigate impacts on a local basis by reducing soil erosion and sediment load, restoring ground cover, restoring diversity of plant species, protecting threatened and endangered or special status species and their habitats, minimizing the introduction or spread of noxious weeds, and protecting important cultural or historic resources. The impacts associated with land and realty surface disturbing activities would continue under the Proposed Action.

The implementation of standards and guidelines under this alternative may require closer scrutiny of future surface-disturbing activities. This may require additional field checks in areas that have been identified as not meeting standards. Projects in areas not meeting the standards would be monitored as needed to ensure compliance with stipulations, especially those including reclamation and rehabilitation. In areas where reclamation efforts have been determined to be unsuccessful, coordination with BLM, authorized users, and allottees may be necessary to determine the cause and identify remedies for the failed reclamation and rehabilitation.

Additional work may be needed to bring disturbed areas up to prescribed standards, which could increase the companies' costs on individual projects if they are required to implement new or additional mitigation measures on future projects. Allottees may have to move livestock to other pastures or adjust AUMs or seasons of use if it is determined that grazing needs to be deferred in a disturbed area to allow ample time for plant regrowth. These changes would be determined by BLM on a case-by-case basis in coordination with the allottee.

If the Proposed Action standards were adopted, emphasis would be placed on reseeding disturbed areas with native plant species. Currently, reseeding is required on disturbed areas, but standard seed mixtures established locally by BLM offices are used. Current seed mixtures are not limited to native species but do include species that can provide plant cover, stabilize the soils, provide desired forage for wildlife, are suitable to soil and climate conditions, and are readily available. The companies' cost of reclaiming a disturbed area may increase if native seed sources are required. Costs also would be affected by the availability of seed.

If the standards and guidelines go into effect, it is anticipated that the BLM, in some areas of the state, would receive increased applications for land exchanges or sales. However, due to the length of time it takes to complete land ownership adjustments, it is not expected that the number of exchanges or sales completed each year would greatly increase from the number currently processed. Any public lands disposed of through exchange or sale would no longer be managed by the BLM and therefore would not be subject to the standards and guidelines. Work is expected to continue on acquiring easements and upgrading or closing existing roads as identified through the land use planning process, (e.g., the existing RMPs).

MINERAL RESOURCES

Implementation of the Proposed Action would not affect the availability of mineral resources. Under this alternative, BLM would not amend mineral resource decisions in the existing land use plans. The existing statutes and regulations under which federal mineral resources are developed place legal or regulatory

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constraints on the application of public land health standards. Because a relatively high environmental standard already applies to mineral resource development, the application of the proposed standards should have no additional effects on most mineral operations. Impacts would occur if more restrictive conditions for use and rehabilitation of disturbed areas are applied as part of use authorizations or permits. The potential impacts of these variations are discussed below.

Salable Minerals (Mineral Materials)

Application of the proposed standards would not change the way existing mineral material sites are used and developed. However, depending on the condition of the land relative to a proposed standard, an Authorized Officer might deny the use of new sites. Because no areas would be closed to this type of mineral entry, any denial of new development would have to be justified on a permit by-permit basis; therefore, it is not possible to locate or quantify the extent of this impact. Because the regulatory discretion to deny mineral material disposal for environmental reasons currently exists, the future implementation of proposed standards should not cause more denials than without the standards.

Locatable Minerals

The application of public land health standards would be limited and constrained by the Mining Law of 1872 and the regulations in 43 CFR Part 3809. The standards may supply additional criteria for developing larger mines. There are few operations of this type on public land in New Mexico. As stated under the No Action Alternative, these operations are currently subject to federal environmental degradation standards and strict standards of the State Mining Law. Therefore, development of mining claims would not be held to higher standards, and the application of the proposed standards would not make the operations more or less profitable.

The "small miner" operations are subject to an unnecessary and undue degradation standard the same as larger permitted mines. This standard implies that "necessary and due" degradation is allowed to continue. Unnecessary and undue determinations by BLM are based on proficient operations of a similar character, effects on other resources and land uses, and proposed mitigation and reclamation measures. As long as a miner is not creating unnecessary and undue degradation, and BLM does not change the regulatory meaning, the public land health standards would have no impact on their operations.

Leasable Minerals

Leasing decisions would not change; therefore, the implementation of public land health standards would not affect the leasing of mineral resources. Lease applications and expressions of interest in a lease would not be turned down or otherwise be impacted by the proposed standards. The BLM is not proposing to close any additional acreage to leasing, and is not proposing to change existing land use decisions by increasing the amount of acreage where leases would be issued with a no-surface occupancy stipulation. Lease rights and the right to access the minerals would not be affected. The proposed standards would not cause additional impacts on current permit holders. Additional no surface-occupancy conditions could not be imposed by BLM on existing leases without negotiating such a change in the lease instrument with the lessee.

There could be potential impacts in those situations where BLM has the discretion to impose seasonal restrictions (or delay), or to vary the specific location of a site. These impacts are germane to the oil and gas program where BLM may relocate proposed well sites up to 200 meters and restrict drilling operations up to 60 days per year without affecting lease rights. This discretion already exists, and could become more frequent as BLM takes action to improve public land health. The potential impacts would be caused by delays, increased cost of access, and disruption of development plans. Based on lease rights and the existing environmental standards which are applied to leasable mineral operations, the proposed standards should not cause additional permit denials. It would not be necessary to deny lease permits based on a standard because standards already exist to mitigate impacts caused by leasable mineral development. Leasable mineral development would not be subject to new or higher standards than those which currently exist.

The potential impacts to mineral development would relate to timing and the exact location of a site, and could vary reclamation procedures from those in current use. This, in and of itself, would not affect the

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ultimate production of recoverable mineral reserves. There would be no discernible change in mineral resource production due to implementation of the public land health standards. There would be no change in the amount of acreage made available for mineral development, and no discernible effect on revenue generated by mineral commodity sales.

NATIVE AMERICAN CULTURAL ISSUES

Native American concerns would continue to be protected under the law as stated in Chapter 3. Emphasis on the use of native plant species and improved habitat would ensure continued or enhanced availability of plant and animal species traditionally used by Native Americans, to the extent that these measures are effective.

ECONOMIC

The analysis in this section refers to the state of New Mexico in terms of economic impact; however, the impacts will be most imposing upon counties with greater than 10% BLM land ownership. Counties with greater than 10% BLM land include 17 counties (Table 3.1), this is over one half of the counties within New Mexico. The primary endogenous sectors associated with BLM lands include oil, gas, and agriculture. Of these sectors, agriculture has proven through time to be the most stable (Figure 4.3). This sector is comprised primarily of individuals and families with sufficient diversity to have enterprises broad enough to capture a favorable market price for one or several agriculture commodities. Whereas, oil and gas sectors are, on the majority, large corporations concentrated in a single commodity. Both sectors are dependent upon a natural resource, but the families in agriculture have an investment that forces them to ride out the price cycles, rather than idling livestock, equipment, and land during the trough portions of the price cycle. Therefore, economic impacts from implementing guidelines associated with grazing standards on BLM land, are essentially imposed upon the stable portion of New Mexico's rural counties, which comprise more than half of the state's counties.

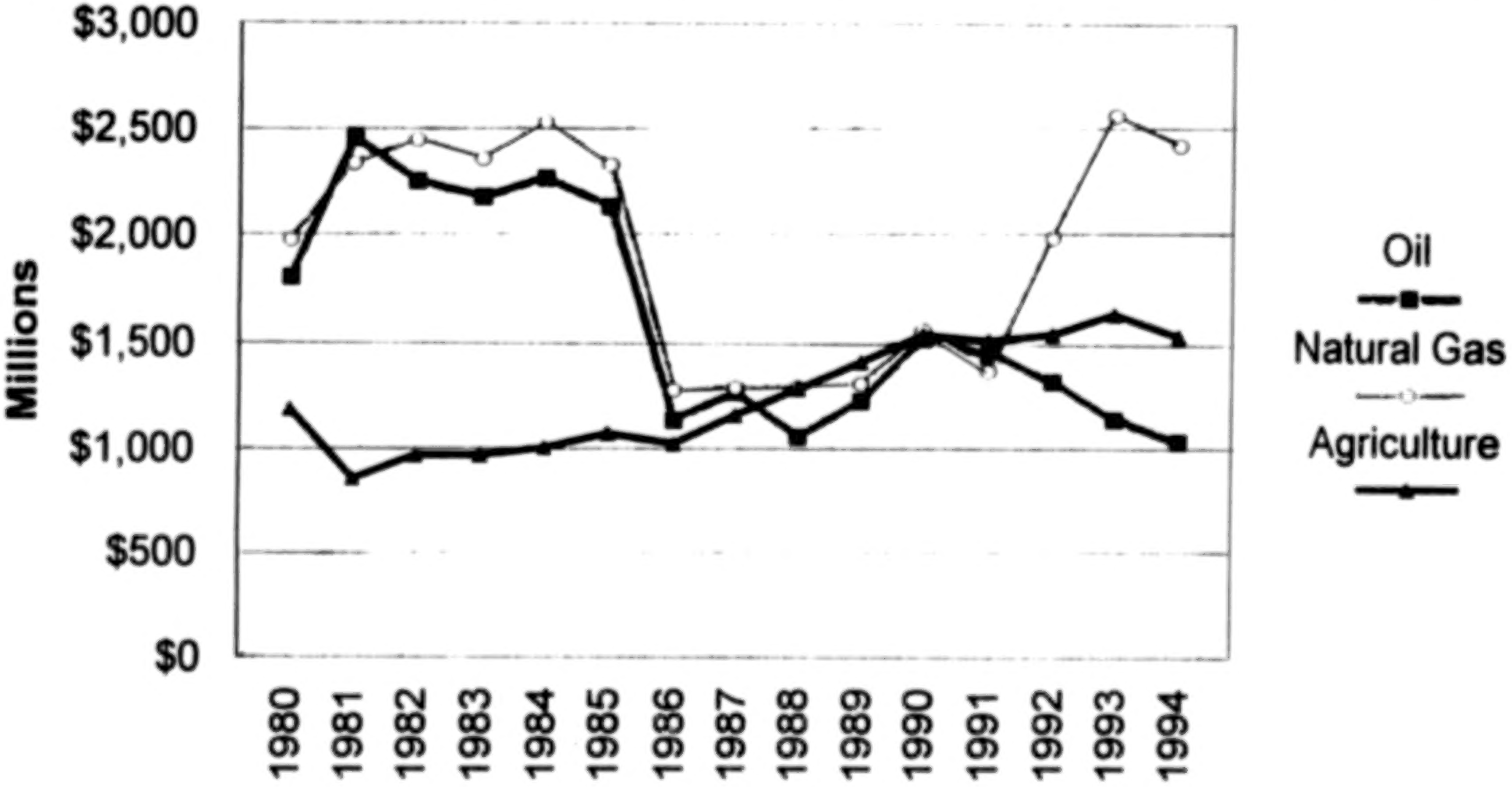
The initial (first year) total economic impacts to the state of New Mexico economy were negative regardless of the alternative, assumptions, and options. The major difference between the assumption that all ranches stayed in business and 22% of them converted to real estate was the loss of 22% of the AUMs from the economy. Also, the assumption that 20% of the AUMs would be removed from allotments, that did not meet the standard, had a greater negative impact than the no AUM reduction option, because of the loss of the value of production from the reduced AUM's in addition to the operational adjustments the allottee was forced to make. In the case where the BLM provided 100% and 50% of the funding for the improvements the economic impacts were identical, because the BLM provided funding for the materials in both cases. Under the option of the rancher funding 100% of the improvements necessary to meet the standards; title to structural range improvements authorized by a Cooperative Agreement for Range Improvements would be shared by the United States and cooperators in proportion to the actual amount of there respective contributions to the initial construction to provide the rancher the necessary incentive to install the specific improvements. Title to no structural range improvement(s) authorized by Cooperative Agreement would be in the United States.

Under RAC alternative and the scenario that all ranches stayed in business, the least economic impact was when there were no AUM reductions. The initial loss of economic activity (Table 4.1a, Table 4.1b) was $4 million of which approximately $1 million of the loss was in personal income. An initial loss of 25.73 FTEs was also estimated under this alternative. As compared to the $19.8 million loss when 20% of AUMs were reduced and 22% of the ranches converted to real estate. These impacts were for a single year and were aggregated over a seven year period to quantify the cumulative impacts to year seven.

Year 10 cumulative impacts included an authorization of additional AUMs, which allowed the ranch unit to restock any AUMs that were reduced plus 1/3 of the AUMs toward preference. The analysis revealed that it required a minimum of 10 years after the initial reductions to yield a positive return in employment when all of the ranches stayed in business. The minimum impacts after 10 years occurred when none of the ranches converted to real estate, no AUMs reduced, and the ranch financed the improvements. The greatest economic loss occurred when there was a 20% reduction in AUMs and BLM financing of improvements under the scenario of 22% of ranches not meeting standard and converting to real estate.
After the tenth year of implementation of the

FIGURE 4-3

NM OIL AND GAS SALES VALUE AND CASH RECEIPTS FOR AGRICULTURE (ALL COMMODITIES)



Oil/Gas data from NMEMNRD
Ag data from NMDA & USDA

Table 4.1a: RAC Alternative - Economic Impacts (cumulative)

All range livestock- no ranches converting to real estate

Year 1	**RAC, No BLM AUM Reduction**		**RAC, 20% BLM AUM Reduction**	
Capital Outlay	50 & 100% BLM	100% Rancher	50 & 100% BLM	100% Rancher
Economic Activity	(4,133,000)	(4,126,000)	(11,533,000)	(11,523,000)
Personal Income	(827,000)	(1,050,000)	(1,979,000)	(2,229,000)
Employment	(27.66)	(25.73)	(105.28)	(101.69)
Year 14	**RAC, No BLM AUM Reduction**		**RAC, 20% BLM AUM Reduction**	
Capital Outlay	50 & 100% BLM	100% Rancher	50 & 100% BLM	100% Rancher
Economic Activity	(21,141,000)	(20,097,000)	(24,179,000)	(24,081,000)
Personal Income	(5,559,000)	(7,635,000)	(6,349,000)	(8,849,000)
Employment	.80	2.73	7.82	11.41
Year 21	**RAC, No BLM AUM Reduction**		**RAC, 20% BLM AUM Reduction**	
Capital Outlay	50 & 100% BLM	100% Rancher	50 & 100% BLM	100% Rancher
Economic Activity	21,275,000	22,319,000	74,520,000	74,617,000
Personal Income	357,000	(1,800,000)	8,388,000	5,888,000
Employment	54.84	56.77	61.86	65.45

Table 4.1b: RAC Alternative - Economic Impacts (cumulative)

All range livestock ranches w/22% converting to real estate

Year 1	**RAC, No BLM AUM Reduction**		**RAC, 20% BLM AUM Reduction**	
Capital Outlay	50 & 100% BLM	100% Rancher	50 & 100% BLM	100% Rancher
Economic Activity	(14,104,000)	(14,098,000)	(19,840,000)	(19,834,000)
Personal Income	(2,312,000)	(2,485,000)	(3,205,000)	(3,401,000)
Employment	(131.00)	(128.50)	(190.01)	(187.24)
Year 14	**RAC, No BLM AUM Reduction**		**RAC, 20% BLM AUM Reduction**	
Capital Outlay	50 & 100% BLM	100% Rancher	50 & 100% BLM	100% Rancher
Economic Activity	(114,402,000)	(114,345,000)	(131,511,000)	(131,442,000)
Personal Income	(18,954,000)	(20,691,000)	(21,872,000)	(23,827,000)
Employment	(92.21)	(89.71)	(104.29)	(101.52)
Year 21	**RAC, No BLM AUM Reduction**		**RAC, 20% BLM AUM Reduction**	
Capital Outlay	50 & 100% BLM	100% Rancher	50 & 100% BLM	100% Rancher
Economic Activity	(57,988,000)	(57,931,000)	(46,285,000)	(46,216,000)
Personal Income	(9,944,000)	(11,744,000)	(8,335,000)	(10,290,000)
Employment	(16.79)	(14.29)	(28.87)	(26.10)

guidelines, the negative impacts due to implementation of improvements lessened to only maintenance and repairs under the RAC alternative. The year to year economic impacts changed from all negative to positive impacts in FTEs, but personal income continued to decline, because the range livestock sector expenditures were still larger than the baseline due to repairs and maintenance which more than offset the increase to the wholesale sector.

In year 14 under the RAC alternative, it was assumed another 1/3 of preference AUMs were authorized on the BLM permits/leases that had previously not met the standard. This continued the positive trend in economic impacts. Minimum impacts (Table 4.1a) occurred when there were no reduction of AUMs and the rancher funded 100% of the improvements. These impacts included: losses of $20 million in economic activity, losses of almost $7.6 million in personal income, and a gain of 2.7 FTEs. The greatest economic loss occurred when 22% of the ranches converted to real estate and there was a 20% reduction of AUMs and the BLM funded the cost of improvements (Table 4.1b). These impacts included: a loss of almost $131.5 million in economic activity, a loss of $21.8 million in personal income, and a loss of 104 FTEs.

Year 21 was the final year of analysis; it was assumed that the allotment should have achieved an ecological condition surpassing the standards and the allotment would be operated with full preference AUMs. The economic impacts varied widely dependant upon the assumptions, and options analyzed. It was recognized that the actual impacts would be in the range between the minimum and maximum economic impacts estimated, since there would be a wide variety of allotment conditions, improvement construction, financing of the improvements, and rancher reactions. Therefore, it was believed that the economic impacts would actually be in a range for this alternative (Tables 4.1a and 4.1b). An important assumption in the analysis was that allotments not meeting the standard would be operated at preference AUMs at the end of 21 years, without this assumption all impacts would be negative.

Under the RAC alternative the range for economic activity was between a loss of almost $58 and a gain of $74.6 million. Personal income varied from a loss of almost $12 to a gain of $8 million. The range for jobs were expected to vary from a loss of 29 FTEs and a gain 66 FTEs.

HUMAN DIMENSION

Financial, Social and Cultural Impact Analyses

The RAC Alternative has four standards, one of which is Human Dimension. The Human Dimension standard is on equal footing with the three physical and biological standards.

Financial

Based on the Central Mountain analysis, the public land ranches not meeting the standards, have a heavy dependency on public lands and are highly leveraged will be most effected by the BLM management changes. With additional required constraints through guideline implementation, these ranchers may not be able to sustain their ranch operations into the next year. With the reduced ranch operations, the affected rancher will be less able to meet their overhead expenses, especially given their increased costs of improvements and maintenance.

Faced with short term financial loss from the RAC alternative, the rancher's options to reduce substantial financial risk are:

- find additional off ranch income
- find private land to rent for livestock, if available
- large ranches could sell off their assets
- acquire other government lands to use, if available
- reduce size of operations
- sell their land and water rights (liquidate)

Financial Threshold Analysis

The financial threshold analysis for the Central Mountain Region shows that, based on the 10 year average, that the extra-small ranch not meeting the standard would no longer meet the Financial Threshold for Production; therefore, grazing on the BLM permit portion would not be financially viable, at least for the short-term. The small, medium, and large ranches not meeting the standard could still meet the Financial Threshold for Production, but at a much reduced level (losses of gross margin of 80%, 34%, and 22% respectively), and none of these ranches not meeting the standard would be able to meet the Financial Threshold for Profitability. See Appendix D.

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As a result of management changes under this alternative, all financial activity would cease from affected BLM permits on extra-small, small, and medium ranches not meeting the standard. The affected large ranches could continue financial activity associated with the BLM permit, assuming there are no reductions in AUMs, and the rancher is not forced to bear the costs of improvements.

In the short term, this alternative will be less adverse financially to the affected ranchers than the Fallback Alternative, but more adverse than the County Alternative. In addition, financial impacts to the individual rancher, local governments and agencies would potentially lose taxes and fees from reduced number of livestock, private property and improvements.

In the long term, the potential exists for affected ranches to be financially improved the most under this Alternative.

Social

Increased operational costs, such as removal of livestock from BLM lands, extra stress of relocating the cattle, finding available pastures and associated costs, would be an increased burden to the family ranch in the short term. The extra stress from ranch operations and the need to find another job or face increased poverty would increase family strife, as documented in empirical studies (Blehar, 1979, Fagin and Little, 1984, Borrero, 1980, Larson, 1984, Brenner, 1975). Rural communities in New Mexico may experience additional social disruption.

Loss of social mobility, erosion of the agrarian way of life, and out-migration would lead to reduced family spending and secondary effects on businesses, infrastructure and schools.

Cultural

This alternative could have adverse impacts on ranches with public lands not meeting the standard. Most public land ranches in New Mexico are family run businesses. The effect of one person losing his or her connection to the land ripples throughout the communities. The communities of the arid southwest are made up of people who share beliefs and values which are, if not embodied by, closely linked to the culture of ranching. As the individuals who ranch leave their lands because of increased economic pressures and/or the demand for changing uses, the values of the communities as a whole begin to unravel in the descent toward a less centered, less self-reliant, and more homogenous monoculture.

The financial and social impacts could have adverse effects on ranch traditions, heritage, attitudes, beliefs and values. The culture of ranching depends on the interaction of the ranchers lives with the land and livestock. Any one of these components taken away dismantles the entire weave. To protect the irreplaceable cultures, the weave of people and land must remain intact in those traditional forms of interaction. Cultural values of self sufficiency, hard work, and other traits, such as community cohesion, collaboration and leadership associated with agrarian communities, could be altered. As discussed in chapter three, the sense of place with its association with a sense of well-being and community stability would be further eroded for some of the ranching communities.

In summary, the potential for adverse financial, social and cultural impacts from the RAC Alternative on ranches and rural New Mexico is in the short term less adverse than the Fallback Alternative. However, for the long term, the communities and ranching operations may be more stable and in better condition financially, socially and culturally under the RAC Alternative when compared to the Fallback or County Alternatives.

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COUNTY ALTERNATIVE

VEGETATION

Upland Vegetation

Under the County Alternative the focus of management and the application of grazing guidelines would occur on public lands that do not meet the standard due to grazing. Changes in management would include fencing and chemical treatments as well as possible deferment on areas not meeting the standard. In the short term, little improvement would be expected. However, in the long term, measurable improvement in vegetative cover and composition would be expected due to grazing management practices. Additionally, vegetation would be enhanced through the use of mechanical and chemical manipulations in both the short and long term. These improvements would occur mostly within the desert and woodland biomes in MLRAs 36, 42, and 70.

Riparian Vegetation

Under the County Alternative, riparian communities and vegetation on 112 riparian segments, which are classified as non-functional and functional at risk with a downward trend or where the trend is not apparent (stable), would not meet the standards. These areas are affected, at least in part, by grazing activities. Management efforts in the short term would improve 13 segments. Of this total, six segments would improve to proper functioning condition. In the long term, 26 areas would improve to proper functioning condition. Improvement of other areas would be limited by the fragmented distribution of BLM riparian areas and the lack of coordinated watershed management efforts.

SOILS

With intense management under this alternative, there would be a continued slow improvement over the long term in upland soil conditions where soils are more productive, such as Mollisols, Alfisols, and moderately fine textured Entisols. On poorer sites, and with less intensive management, there would be little or no change over the long term in the health of the upland soils except in response to drought or additional moisture conditions. No changes are expected for either case over the short term. There would be slightly more overall improvement than the No Action Alternative due to implementation of grazing management guidelines. Over half of the uplands not meeting the standard for this alternative are in MLRA 42; however, the soil response to management in this MLRA would be slow. More profound response would come from the better sites such as those in MLRAs 36 (northern part); 39, 41, 48A, 70 (northern part); and the gently sloping uplands of MLRA 77. These expected gains could actually be slower or less than those described for the No Action Alternative if the human cultural and economic dimensions of this alternative are given equal or greater weight than achieving overall public land health.

WATER

In the long term, continued implementation of BMPs to reduce NPS pollution and riparian area management would promote reductions in erosion and sediment production from public lands and slowly improve water quality. There would be less sediment, nutrients, salts, and biological contaminants in the water. However, under this alternative, the improvement in water quality from public lands would be balanced with human dimension aspects. The cycle of apparent arroyo filling is expected to continue, which would support riparian restoration, in turn improving water quality by acting as a filter for many pollutants.

While water quality affected by public land uses might improve, it is not expected that any of the water-quality limited stream reaches identified by the state would improve enough to meet state standards solely from this action. The impacts on those water quality-limited stream reaches from non-public land uses and sources of pollutants would also have to be reduced to help meet state standards.

GRAZING ADMINISTRATION

Under the County Alternative, livestock use levels are expected to remain approximately at the seven-year average over the short term, similar to the No Action Alternative. Adjustments in livestock numbers are expected to be upward on some allotments and downward on others. Adjustments are not expected to be large, either upward or downward because in general, current permits and leases are consistent with grazing capacities established through BLMs' rangeland monitoring program. Statewide, AUM adjustments are expected to balance out over the long term. However, fluctuation in use levels can be expected due to a variety of factor, such as weather conditions and the

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price of livestock. The long term AUM projection statewide is expected to be around preference, which is 1,968,341 AUMs.

Implementing the guidelines in the County Alternative would be similar to BLM'S current managment under the No Action Alternative. The livestock management practices may include rest or deferment, adjusting livestock numbers, changing seasons of use, modifying or developing range improvements, and vegetative land treatments. There would be segments of riparian habitat where current grazing practices would be adjusted to achieve riparian standards. In the short term, functional condition on 13 riparian segments would be expected to improve. In the long term, improvement in functional condition would be expected on 26 segments. Vegetation and litter in the riparian zone should respond and increase on the segments improved. The increase in canopy cover and litter should decrease the runoff and sediment, and improve the water quality.

Under this alternative, 287 permittees could be affected. On the majority of the larger allotments, modifications in use will have only minor impact on ranching operations, however, smaller operations may be affected more. Permittees most affected by the guidelines would be those with small one-pasture allotments where it may be necessary to defer grazing during critical periods of plant growth or regrowth. As a result, the permittee may be burdened financially by having to lease private pasture, improve private lands, add fencing to create an additional pasture, or partner with another allotment. There are also the additional costs associated with the handling of livestock for gathering and transporting.

WILD HORSES

Impacts on the Socorro wild horse herd from the implementation of the County Alternative would be similar to the No Action Alternative, with the exception that the RMP decision would be in conformance with the standard for rangeland health. Based on monitoring data, the area is in fair to good condition with a static trend and meets the standard. The existing resource condition would improve as in the No Action Alternative, as long as the AML of 50 is maintained and balanced with livestock grazing and other uses.

Impacts on the Farmington wild horse herd would be the same as under the No Action Alternative.

WILDLIFE

Implementing the County Alternative standards and guidelines would benefit wildlife in the short and long term in both upland and riparian areas by applying grazing guidelines. The improvement of riparian habitats currently functioning at risk with a downward trend would benefit wildlife, since these areas are the most diverse and productive areas.

The County Alternative would seek a balance between biological resources and human dimension concerns. The BLM would work cooperatively with the Department of Game and Fish to address wildlife population increases to assure no resource change or damage acquires and that existing uses of resources are protected.

While wildlife would be considered on the allotment level it does not provide for a review at the landscape level when developing AMPs.

36 - New Mexico and Arizona Plateaus and Mesas

Long-term benefits to big game would occur from the County Alternative when compared to the existing situation because it would improve upland habitat currently in poor condition or that is not meeting the standard due to grazing practices. However because this alternative utilizes less restrictive guidelines on livestock grazing than the Proposed Action it would not be as beneficial to upland habitat. Mule deer and elk are the primary big game species benefitting from these actions. There would be an increase in the deer population resulting from improving the quality and quantity of browse on upland sites, and creating new fawning areas.

Elk are currently increasing in numbers. Under the County alternative the elk numbers and potential increases in elk would be balanced with human dimension needs. The BLM would work cooperatively with the NMDGF to address wildlife populations so that no resource damage would occur and grazing preference could be achieved.

The quality of habitat would improve (but to a lesser degree than the Proposed Action over the long term for riparian-dependent big game species (turkey, deer, and furbearers). However, due to other limiting factors (drought) and hunting regulations, no measurable increase in populations would be expected.

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Allowing public access while controlling off-highway vehicle use and protecting wildlife habitat is a major concern for most field offices. Off-highway vehicle use could potentially increase the number of roads on public land, resulting in the degradation of big game habitat and increased wildlife harassment and displacement. Under the County Alternative and associated standards for erosion and wildlife habitat, road closures would continue.

Upland game and Nongame

Upland sites would improve over the long term from land treatments and proper grazing practices on the acres that are not meeting the standards, resulting in a benefit for most upland wildlife species. The continued construction of water developments would favor upland game bird species.

Waterfowl/Fisheries

Habitat quality for resident fisheries and waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Over the long term, public land-resident fisheries habitat would be improved.

37 - San Juan River Valley Mesas and Plateaus

Long-term benefits to big game would occur from the County Alternative when compared to the existing situation because it would improve upland habitat currently in poor condition or not meeting the standards due to grazing practices. However, because this alternative utilizes less restrictive guidelines on livestock grazing than the Proposed Action it would not be as beneficial to upland habitat.

The quality of habitat would improve but to a lesser degree than the Proposed Action over the long term for riparian-dependent big game species (turkey, deer, and furbearers). However, due to other limiting factors (drought) and hunting regulations, no increases in populations would be expected.

Allowing public access while controlling off-highway vehicle use and protecting wildlife habitat is a major concern for most field offices. Off-highway vehicle use could potentially increase the number of roads on public land, resulting in degradation of big game habitat and the increase of wildlife harassment and displacement. Under the County Alternative and associated standards for erosion and wildlife habitat, road closures would be continue.

Upland Game and Nongame

Upland sites would improve over the long term on the acres that are not meeting the standard from land treatments and proper grazing practices, resulting in a benefit for most upland wildlife species. The continued construction of water developments would favor upland game bird species.

Waterfowl/Fisheries

Habitat quality for resident fisheries and waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Public land resident fisheries habitat over the long term would be improved.

39 - Arizona and New Mexico Mountains

Big Game

The BLM manages very little public land within this MLRA. Under the County Alternative, there are several areas where the standards and guidelines would improve wildlife habitat. Upland improvement projects, along with controlled grazing, would improve wildlife habitat for big game species over the long term. The southwestern part of the state has a very active fire season. These natural events can be beneficial to resident elk herds by creating open meadow areas and increasing the amount of forage.

Upland Game and Nongame

Upland sites would improve over the long-term from land treatments and guidelines for grazing practices, resulting in a benefit for most upland and nongame wildlife species.

Waterfowl/Fisheries

Habitat quality for resident fisheries and waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Public-land resident fisheries habitat would be improved over the long term.

41 - Southeastern Arizona Basin and Range

A small percentage of this MLRA exists on BLM lands. Upland habitat would be improved under the County Alternative, thereby improving Coues' whitetail deer habitat in the southwestern corner of New Mexico.

42 - Southern Desertic Basins, Plains, and Mountains

Long-term benefits to big game would occur from the County Alternative by utilizing guidelines on livestock grazing, and improving upland habitat currently in poor condition or not meeting county standards due to grazing practices. Management of wildlife resources and objectives would be balanced with established RMP livestock forage allocations.

The County Alternative would help rectify historic land use practices that have caused problems such as the dewatering of streams and springs and altered or displaced big game species. Implementation of grazing guidelines, vegetative land treatments, increased water developments, road closures, and cooperative management efforts would have long-term benefits to big game habitat. Natural events (fire, flooding, etc.) that create a mosaic within the landscape and diversify the plant community would also benefit wildlife.

There would be a slight increase in the deer population from improving the quality and quantity of browse on upland sites, and creating new fawning areas. Management of wildlife resources and objectives would be balanced with established RMP livestock forage allocations. Pronghorn antelope populations are expected to increase over the long term due to improved habitat conditions and transplants. Habitat conditions would improve over the long term due to improved ecological conditions and movement patterns. Antelope transplants would be expected to continue in cooperation with the NMDGF and land owners.

Competition for food and space between mule deer and the Iranian ibex would continue under the County Alternative. Oryx would continue to move off the White Sands Missile Range and may displace mule deer and antelope by their size and aggressive behavioral patterns.

The quality of habitat would improve, but to a lesser degree than the Proposed Action over the long term for riparian-dependent big game species (turkey, deer, and furbearers). However, due to other limiting factors (drought) and hunting regulations, no measurable increase in populations can be expected.

Allowing public access while controlling off-highway vehicle use and protecting wildlife habitat is a major concern for most field offices. Off-highway vehicle use can potentially increase the number of roads on public land, resulting in the degradation of big game habitat and the increase of wildlife harassment and displacement. Under the County Alternative and associated standards for erosion and wildlife habitat, road closures would continue to be implemented.

Upland Game and Nongame

Upland sites would gradually improve in the long term from land treatments and grazing management practices, resulting in a benefit for scaled quail, Gambel's quail, and dove populations. The continued construction of water developments would favor upland game bird species.

Waterfowl/Fisheries

Habitat quality for resident fisheries and waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Public-land resident fisheries habitat over the long term would be improved.

48 - Southern Rocky Mountains

A small percentage of this MLRA exists on BLM lands. Upland habitat would improve under the County Alternative, resulting in the improvement of some wildlife habitat within the MLRA.

51 - High Intermountain Valleys

Big Game

Under the County Alternative, management of wildlife resources and objectives would be balanced with established RMP livestock forage allocations. Long-term benefits to big game would occur from improving upland habitat currently in poor condition or not meeting the biotic standard due to grazing practices. Rocky Mountain elk would continue to be a key wildlife species within the Taos field office. Critical winter range would improve through the implementation of the county standards and guidelines.

Upland Game and Nongame

Upland sites would improve over the long term from land treatments and proper grazing practices, resulting in a benefit for scaled quail, mourning dove, Merriam's turkey, numerous raptors, and migratory bird populations. The continued construction of water developments would favor upland game bird species.

Waterfowl/Fisheries

Habitat quality for resident fisheries and waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Public-land resident fisheries habitat over the long term would be improved.

70 - Pecos/Canadian Plains and Valleys

Big Game

Long-term benefits would result from the County Alternative when compared to the existing situation because it would improve upland habitat currently in poor condition or not meeting the biotic standard due to grazing practices. However, because this alternative utilizes the less restrictive guidelines on livestock grazing than the Proposed Action it would not be as beneficial to upland habitat. The development and implementation of AMPs that identify management objectives consistent with the counties' standards and guidelines would allow vegetative land treatments and water developments to maintain or slightly improve wildlife habitat for big game species over the long term. Natural events (fire, flooding, etc.) that create a mosaic within the landscape and diversify the plant community would also benefit wildlife. There would be a slight increase in the deer population from improving the quality and quantity of browse on upland sites, and creating new fawning areas. Pronghorn antelope populations are expected to increase over the long term due to improved habitat conditions and transplants. Habitat conditions would improve over the long term due to improved ecological conditions and movement patterns. Antelope transplants would be expected to continue in cooperation with the NMDGF and land owners.

Upland Game and Nongame

Upland sites would gradually improve over the long term, from land treatments and grazing practices outlined in the County Alternative standards and guidelines would result in benefits to scaled quail and dove populations. The continued construction of water developments would favor upland game bird species.

The habitats and populations of candidate, sensitive, rare, New Mexico State listed, or other special status categories should be managed in accordance with state law. If special habitat management actions are required, the BLM would conduct a private sector impact assessment to balance the needs of the species with the impacts of the private sector.

Waterfowl/Fisheries

Habitat quality for resident fisheries and waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Public-land resident fisheries habitat over the long term would be improved.

77 - Southern High Plains

Big Game

The BLM manages very little public land within the MLRA. Under the County Alternative, management would remain the same as current management (the No Action Alternative). RMP decisions would improve big game habitat by identifying goals and objectives that allow vegetative land treatments and water developments.

Upland Game and Nongame

Upland sites would gradually improve over the long term from land treatments and grazing practices identified in the county guidelines, improving the habitat for most upland and nongame wildlife species.

Waterfowl/Fisheries

Habitat quality for resident fisheries and waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Public land - resident fisheries habitat over the long term would be improved.

SPECIAL STATUS SPECIES

Under the County Alternative, the focus of management and application of grazing guidelines would occur on public lands not meeting the biotic and upland standards, due to current grazing practices. These areas

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are contained primarily within the desert biome of MLRAs 36, 37 and 42 and the grassland biome of MLRA 70. There would be benefits to a portion of the 95 special status species occurring in the improved areas of the desert and grassland biomes managed under this alternative. Of concern when implementing livestock grazing practices is that areas of late-seral and PNC ecological status not decline due to redistribution of grazing patterns. These areas, in many cases, provide suitable habitat to support special status species with late-seral habitat requirements.

Also of concern in this alternative are the approximately 112 riparian segments that do not meet the proposed standards, due, at least in part, to livestock grazing. The greatest benefits to special status species resulting from this alternative would be the improvement of riparian conditions on 13 riparian segments in the short term and 26 riparian segments in the long term. Many of the 76 special status species associated with riparian areas and their aquatic systems would benefit from the improvement in riparian condition.

Areas past the threshold of improvement have lost the capability to recover toward PNC within the long term of this analysis, even in the absence of grazing. In some cases, the PNC has shifted toward a different community. Even with chemical or mechanical manipulation, these areas may never reestablish a community like the lost native community. This is due to the change in ecosystem functionality occurring with the combined impacts of soil loss and vegetative community shifts associated with major disruptions caused by past land use practices and climate change. Examples of these are former desert grasslands which are now mesquite sand dunes and creosote bush/desert pavement communities of the Chihuahuan Desert in MLRA 42. Special status species that formerly used these areas would have differing abilities to recolonize these habitats as the relative condition improves with subsequent management. Some species, such as obligate grassland species like Baird's sparrow, may never be able to return to former habitats. Other areas, such as the shinnery oak/dunes areas of MLRAs 42 and 70 retain profound capability to return to previous grassland dominance, and the ability to support grassland species such as the lesser prairie chicken.

RECREATION

Under the County Alternative, recreational visitor use would continue to increase, especially in areas where urban visitors recreate. Developed recreation sites would particularly experience increased use. The recreational use levels on a statewide basis are not expected to be impacted by the standards and guidelines.

The County Alternative would provide for increased management of off-highway vehicle use and less road proliferation on approximately 4,600 acres in MLRA 36 and 7,300 acres in MLRA 42. Although these areas may be important to off-highway vehicle visitors that frequent the areas, on a statewide basis, they represent a small percent of the public land acreage.

Increased recreation supervision would occur on approximately 10,600 acres in MLRA 36 and 500 acres in MLRA 37 where recreational activities are keeping the area from meeting the upland standard. Additionally, recreation management would increase on 12,600 acres in MLRA 36 not meeting the biotic standard.

Considering that there may be overlap on many of the acres identified as having recreation conflicts with the standards, the additional restrictions would occur on less than 33,700 acres. This would not be a detectable impact on the recreational use of the public lands on a statewide basis.

It is expected that the present conflicts between livestock use and the developed facilities at the Wild Rivers Recreation Area would be resolved over the next five years. As additional recreational sites are developed, livestock are expected to be excluded.

The BLM would be expected to resolve livestock grazing conflicts on riparian areas. In the long term, an additional 26 riparian segments are expected to improve in condition, thereby improving the quality of the visit for recreationists on the public lands.

Not all of the acres are failing to meet the standards due to livestock grazing. However, many acres are expected to have an improved quality of visits for recreational visitors due to the improved native vegetation communities.

WILDERNESS

The County Alternative standards emphasize improving the natural systems in balance with the local community's social and economic needs.

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Where sites not meeting the standard are included in WAs or WSAs, they would be expected to be a high priority for improved management. The review of WAs and WSAs to determine if they meet the standards should help determine what management changes are needed.

However, in WAs and WSAs the Wilderness Act and BLM management guidelines for these areas would limit some of the tools for management. For example, the range improvements that are normally applied to support improved livestock grazing management and land treatment techniques may not be permitted inWAs and WSAs. However, if theWAs and WSAs meet the standards, there would be no impact on wilderness values.

CULTURAL RESOURCES

Damage to or loss of archaeological sites in both upland and riparian areas due to erosion would be reduced, commensurate with reductions in erosion.

PALEONTOLOGY

Damage to or loss of paleontological sites in both upland and riparian areas due to erosion would be reduced, commensurate with reductions in erosion.

REALTY/LAND USE

Local areas are impacted by land and realty activities creating both short- and long-term surface disturbances by reducing vegetative cover and forage, increasing erosion or sediment load, degrading wildlife habitat, and increasing the potential for the introduction or spread of noxious weeds. Under the County Alternative, restoring the forage base to reduce impacts on the livestock industry would be an objective. If stipulations are approved, complied with and successful, they would mitigate impacts on a local basis by reducing soil erosion and sediment load, restoring ground cover, restoring diversity of plant species, protecting threatened and endangered or special status species and their habitats, minimizing the introduction or spread of noxious weeds, and protecting important cultural or historic resources. The impacts associated with land and realty surface-disturbing activities would continue under the County Alternative.

The implementation of standards and guidelines may require closer scrutiny of future surface-disturbing activities, such as requiring additional field checks in areas that have been identified as not meeting a standard. Projects in areas not meeting the standards would be monitored as needed to ensure compliance with stipulations, especially those dealing with reclamation and rehabilitation. In areas where reclamation efforts have been determined to be unsuccessful, coordination with the BLM, authorized users, and allottees may be necessary to determine the cause, and identify remedies for the failed reclamation and rehabilitation.

Additional work may be necessary to bring disturbed areas up to prescribed standards. This could increase companies' costs on individual projects if they are required to implement new or additional mitigation measures on future projects. Allottees may have to move livestock to other pastures or adjust AUMs or season of use if it is determined that grazing needs to be deferred in a disturbed area to allow ample time for plant regrowth. These changes would be determined on a case-by-case basis in coordination with the allottee.

Although not required, if the county standards are adopted, emphasis would be placed on reseeding disturbed areas with native plant species. Currently, reseeding is required on disturbed areas, but standard seed mixtures established locally by BLM are used. Current seed mixtures are not limited to native species but include species that can provide plant cover, stabilize soils, provide desired forage for wildlife, are suitable to soil and climate conditions, and are readily available. The companies' cost of reclaiming a disturbed area could increase if native seed sources are required. Costs would also be affected by the availability of seed.

If the County Alternative sandards and guidelines go into effect, it is anticipated that the BLM would receive increased applications for land exchanges or sales. However, due to the staffing and budget demands and the length of time it takes to complete land ownership adjustments, it is not expected that the number of exchanges or sales completed each year would greatly increase from the number currently processed. Any public lands disposed of through exchange or sale would no longer be managed by the BLM and therefore would not be subject to the standards and guidelines. Work is expected to continue on acquiring easements or upgrading or closing existing roads as identified through the land use planning process, (i.e., RMPs).

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MINERAL RESOURCES

Under the County Alternative, impacts on mineral resources would be the same as the for the Proposed.

NATIVE AMERICAN CULTURAL ISSUES

Native American concerns would continue to be protected under the law as outlined in Chapter 3.

ECONOMIC

The analysis in this section refers to the state of New Mexico in terms of economic impact; however, the impacts will be most imposing upon counties with greater than 10% BLM land ownership. Counties with greater than 10% BLM land include 17 counties (Table 3.1), this is over one half of the counties within New Mexico. The primary endogenous sectors associated with BLM lands include oil, gas, and agriculture. Of these sectors, agriculture has proven through time to be the most stable (Figure 4.1). This sector is comprised primarily of individuals and families with sufficient diversity to have enterprises broad enough to capture a favorable market price for one or several agriculture commodities. Whereas, oil and gas sectors are, on the majority, large corporations concentrated in a single commodity. Both sectors are dependent upon a natural resource, but the families in agriculture have an investment that forces them to ride out the price cycles, rather than idling livestock, equipment, and land during the trough portions of the price cycle. Therefore, economic impacts from implementing guidelines associated with grazing standards on BLM land, are essentially imposed upon the stable portion of New Mexico's rural counties, which comprise more than half of the state's counties.

The initial (first year) total economic impacts to the state of New Mexico economy were negative regardless of the alternative, assumptions, and options. The major difference between the assumption that all ranches stayed in business and 22% of them converted to real estate was the loss of 22% of the AUMs from the economy. Also, the assumption that 20% of the AUMs would be removed from allotments, that did not meet the standard, had a greater negative impact than the no AUM reduction option, because of the loss of the value of production from the reduced AUM's in addition to the operational adjustments the allottee was forced to make. In the case where the BLM provided 100% and 50% of the funding for the improvements the economic impacts were identical, because the BLM provide funding for the materials in both cases. Under the option of the rancher funding 100% of the improvements necessary to meet the standards; title to structural range improvements authorized by a Cooperative Agreement for Range Improvements would be shared by the United States and cooperators in proportion to the actual amount of there respective contributions to the initial construction to provide the rancher the necessary incentive to install the specific improvements. Title to no structural range improvement(s) authorized by Cooperative Agreement would be in the United States.

Under County alternative and the scenario that all ranches stayed in business, the least economic impact was when there were no AUM reductions. The initial loss of economic activity (Table 4.2a, Table 4.2b) was almost $1.7 million of which approximately a $476,000 loss in personal income. A total loss of 10.3 FTEs was estimated under this alternative. As compared to the $12.6 million loss when 20% of AUMs were reduced and 22% of the ranches converted to real estate. These impacts were for a single year and were aggregated over a seven year period to quantify the cumulative impacts to year seven.

Year 10 cumulative impacts included an authorization of additional AUMs, which allowed the ranch unit to restock any AUMs that were reduced plus 1/3 of the AUMs toward preference. The analysis revealed that it required a minimum of 10 years after the initial reductions to yield a positive return in employment when all of the ranches stayed in business. The minimum impacts after 10 years occurred when none of the ranches converted to real estate, no AUM reductions, and the ranch financed the improvements. The greatest economic loss occurred when there was a 20% reduction in AUMs and BLM financing of improvements under the scenario of 22% of ranches not meeting standard and converting to real estate.

After the tenth year of implementation of the guidelines, the negative impacts due to implementation of improvements lessened to only maintenance and repairs under this alternative. The year to year economic impacts changed from all negative to positive impacts in FTEs, but personal income continued to decline, because the range livestock sector expenditures were still larger than the baseline due to repairs and maintenance which more than offset the increase to the wholesale sector.

Table 4.2a: County Alternative - Economic Impacts (cumulative)

All range livestock- no ranches converting to real estate

Year 1	**County No BLM AUM Reduction**		**County 20% BLM AUM Reduction**	
Capital Outlay	50 & 100% BLM	100% Rancher	50 & 100% BLM	100% Rancher
Economic Activity	(1,666,000)	(1,660,000)	(6,777,000)	(6,772,000)
Personal Income	(326,000)	(476,000)	(1,139,000)	(1,303,000)
Employment	(12.40)	(10.33)	(62.25)	(59.92)
Year 14	**County No BLM AUM Reduction**		**County 20% BLM AUM Reduction**	
Capital Outlay	50 & 100% BLM	100% Rancher	50 & 100% BLM	100% Rancher
Economic Activity	(3,170,000)	(3,114,000)	(7,047,000)	(6,990,000)
Personal Income	(1,401,000)	(2,897,000)	(2,389,000)	(4,026,000)
Employment	7.00	9.07	17.24	19.64
Year 21	**County No BLM AUM Reduction**		**County 20% BLM AUM Reduction**	
Capital Outlay	50 & 100% BLM	100% Rancher	50 & 100% BLM	100% Rancher
Economic Activity	25,272,000	25,328,000	60,841,000	60,898,000
Personal Income	2,599,000	1,104,000	7,558,000	5,921,000
Employment	43.62	45.69	53.86	56.26

Table 4.2b: County Alternative - Economic Impacts (cumulative)

All range livestock ranches w/22% converting to real estate

Year 1	**County No BLM AUM Reduction**		**County 20% BLM AUM Reduction**	
Capital Outlay	50 & 100% BLM	100% Rancher	50 & 100% BLM	100% Rancher
Economic Activity	(8,578,000)	(8,574,000)	(12,580,000)	(12,605,000)
Personal Income	(1,369,000)	(1,804,000)	(2,010,000)	(2,147,000)
Employment	(80.47)	(78.80)	(119.64)	(118.22)
Year 14	**County No BLM AUM Reduction**		**County 20% BLM AUM Reduction**	
Capital Outlay	50 & 100% BLM	100% Rancher	50 & 100% BLM	100% Ranch
Economic Activity	(63,765,000)	(63,721,000)	(81,403,000)	(81,655,00
Personal Income	(10,095,000)	(14,442,000)	(13,194,000)	(14,559,000)
Employment	(47.91)	(46.24)	(58.56)	(57.09)
Year 21	**County No BLM AUM Reduction**		**County 20% BLM AUM Reduction**	
Capital Outlay	50 & 100% BLM	100% Rancher	50 & 100% BLM	100% Rancher
Economic Activity	(16,942,000)	(16,899,000)	(18,279,000)	(18,532,000)
Personal Income	(2,376,000)	(6,772,000)	(3,106,000)	(4,470,000)
Employment	17.35	19.02	6.70	8.17

In year 14 under the County alternative, it was assumed another 1/3 of preference AUMs were authorized on the BLM permits/leases that had previously not met the standard. Minimum impacts (Table 4.2a) occurred when there were no reduction of AUMs and the rancher funded 100% of the improvements. These impacts included: losses of $3.1 million in economic activity, losses of $2.9 million in personal income, and a gain of 9 FTEs. The greatest economic loss occurred when 22% of the ranches converted to real estate and there was a 20% reduction of AUMs and the Rancher funded the cost of improvements (Table 4.2b). These impacts included: a loss of almost $82 million in economic activity, a loss of $14.6 million in personal income, and a loss of 57 FTEs. Year 21 was the final year of analysis; it was assumed that the allotment should have achieved an ecological

condition surpassing the standards and the allotment would be operated with full preference AUMs. The economic impacts varied widely dependant upon the assumptions, and options analyzed. It was recognized that the actual impacts would be in the range between the minimum and maximum economic impacts estimated, since there would be a wide variety of allotment conditions, improvement construction, financing of the improvements, and rancher reactions. Therefore, it was believed that the economic impacts would actually be in a range for this alternative (Tables 4.2a and 4.2b).

HUMAN DIMENSION

Financial, Social and Cultural Impact Analyses

The overall County Alternative goal and direction, would incorporate human dimension protection as a part of determining each standard before implementing this alternative to avoid potential financial, social and cultural disruption.

Financial

Based on the Central Mountain analysis, the public land ranches not meeting the standards, have a heavy dependency on public lands and are highly leveraged will be most effected by the BLM management changes. With additional required constraints through guideline implementation, these ranchers may not be able to sustain their ranch operations into the next year. With the reduced ranch operations, the affected rancher will be less able to meet their overhead expenses, especially given their increased costs of improvements and maintenance.

Financial Threshold Analysis

The financial threshold analysis for the Central Mountain Region shows that, based on the 10 year average, all affected ranches in the four typical ranch size categories would continue to meet the Financial Threshold for Production, but at a reduced level (losses of gross margin of 69%, 38%, 23%, and 8.3%, respectively). The large ranch would still be able to meet the Economic Threshold for Profitability, although with a smaller residual profit. In summary, the above analysis shows that the effected extra small and small ranches in the Central Mountains would be better off financially to discontinue ranching on their BLM permits, at least in the short run. However, the medium and large ranches would be better off financially to continue with their BLM permits. See Appendix D.

If the affected rancher must bear the cost of improvements, and/or reduce the BLM permit by 20%, the medium ranch would also minimize losses by discontinuing grazing on the BLM permit, at least in the short-term. Financial activity on the affected medium ranches would continue provided the rancher is not forced to bear the cost of improvements or suffer a 20% reduction in permitted AUMs. Financial activity on all affected large ranches would most likely continue.

Although, an objective of the County Alternative is to stabilize the industry and related local tax base, a potential exists for a ranch to be financially burdened, especially in the short term. However, the short term costs are within the acceptable range of ranch operational costs and returns. In the short term, this alternative will be less adverse financially to the affected ranchers than either the RAC or Fallback Alternatives. In addition to the financial impacts to the individual rancher, local governments and agencies would potentially lose taxes and fees from reduced number of livestock, private property and improvements.

The potential exists for affected ranches to be financially improved in the long run; but, not as much as under the RAC Alternative.

Social

An objective of the County Alternative is to stabilize the family ranch so the operation can support the community and the range resources. However, increased operational costs, such as removal of livestock from BLM lands, extra stress of relocating the cattle, finding available pastures and associated costs, would be an increased burden to the family ranch in the short term. The extra stress from ranch operations and the need to find another job or face increased poverty would increase family strife, as documented in empirical studies (Bieber, 1979, Fagin and Little, 1984, Borrero, 1980, Larson, 1984, Brenner, 1975). Rural communities in New Mexico may experience additional social disruption.

Loss of social mobility, erosion of the agrarian way of life, and out-migration would lead to reduced family spending and secondary effects on businesses, infrastructure and schools.

Cultural

This alternative could have adverse impacts on small and extra small ranches with public lands not meeting the standard. Most public land ranches in New Mexico are family run businesses. If the ranch operation is impacted adversely, it affects the family and extended families, which affects the ranching culture.

The financial and social impacts could have adverse effects on ranch traditions, heritage, attitudes, beliefs and values. Cultural values of self sufficiency, hard work, and other traits, such as community cohesion, collaboration and leadership associated with agrarian communities, could be altered. As discussed in chapter three, the sense of place with its association with a sense of well-being and community stability would be further eroded for many of the ranching communities.

In summary, the potential for adverse financial, social and cultural impacts from the County Alternative on ranches and rural New Mexico is relatively less than the Fallback or RAC Alternatives for the short term. However, for the long term the communities and ranching operations may be more stable and in better condition financially, socially and culturally under the RAC Alternative.

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FALLBACK ALTERNATIVE

VEGETATION

Upland Vegetation

Under the Fallback Alternative, the focus of management and the application of grazing guidelines within this alternative would occur on the public lands that do not meet the standard. Changes in grazing management would include water development, fences, and vegetative treatments and possible deferment on areas, not meeting the standard. In the short term, little improvement would be expected. However, in the long term, measurable improvement in vegetative cover and composition would be expected due to grazing management practices. Additionally, vegetation would be enhanced through the use of mechanical and chemical manipulations in both the short and long term. These improvements would occur mostly within the desert and woodland biomes in MLRAs 36, 42, and 70.

Riparian Vegetation

Under the Fallback Alternative, riparian communities and vegetation on 154 riparian segments classified as nonfunctional or functional at risk with a downward trend or where the trend is not apparent (stable), would not meet the standards. These areas are affected, at least in part, by grazing activities. Management efforts in the short term are projected to improve 20 segments. Of this total, 10 segments would improve to proper functioning condition. In the long term, 29 areas would improve to proper functioning condition and 58 other segments would be improved. Improvement of many areas would be limited by the fragmented distribution of BLM riparian areas and the lack of coordinated watershed management efforts.

SOILS

With intense management under the Fallback Alternative, there would be a continued slow improvement over the long term in upland soil conditions where soils are more productive, such as Mollisols, Alfisols, and moderately fine textured Entisols. On poorer sites, and with less intensive management, there would be little or no change over the long term in the health of the upland soils except in response to drought or additional moisture conditions. No changes are expected for either case over the short term. This alternative would result in the most overall improvement of all the alternatives due to implementation of grazing management guidelines. Over half of the uplands not meeting the standard for this alternative are in MLRA 42; however, the soil response to management in this MLRA would be slow. More profound response would come from the better sites such as those in MLRAs 36 (northern part); 39, 41, 48A, 70 (northern part); and the gently sloping uplands of MLRA 77.

WATER

In the long term, continued implementation of BMPs to reduce NPS pollution and riparian area management would promote reductions in erosion and sediment production from public lands and slowly improve water quality. There would be less sediment, nutrients, salts, and biological contaminants in the water. The cycle of apparent arroyo filling is expected to continue which would support riparian restoration, in turn improving water quality by acting as a filter for many pollutants.

While water quality affected by public land uses might improve, it is not expected that any of the water quality-limited stream reaches identified by the state would improve enough to meet state standards solely from this alternative. The impacts on those water quality-limited stream reaches from non-public land uses and sources of pollutants would also have to be reduced to help meet state standards.

GRAZING ADMINISTRATION

Under the Fallback Alternative, livestock use levels are expected to remain approximately at the seven- year average over the short term, similar to the No Action Alternative. Adjustments in livestock numbers are expected to be upward on some allotments and downward on others. Adjustments are not expected to be large, either upward or downward because in general, current permits and leases are consistent with grazing capacities established through BLM's rangeland monitoring program. Statewide AUM adjustments are expected to balance out over the long term. However, fluctuation in use levels can be expected due to a variety of factors such as weather conditions and the price of livestock. The long term AUM projection is expected to be around preference which is 1,968,341 AUMs.

Implementing the guidelines for the Fallback Alternative would be similar to what BLM is doing now in the No Action Alternative. The livestock management practices may include rest or deferment, adjusting livestock numbers, changing season of use, modifying or developing range improvements and vegetative land treatments. There would be segments of riparian habitat where current grazing practices would be adjusted to achieve riparian standards. In the short term, functional condition on 20 riparian segments would be expected to improve. In the long-term, improvement in functional condition would be expected on 58 segments. Vegetation and litter in the riparian zone should respond and increase on the segments improved. The increase in canopy cover and litter should decrease the runoff and sediment, and improve the water quality.

Under this alternative 480 permittees could be affected. On the majority of the allotments which are larger, modifications in use will have only minor impact to their ranching operation; however, smaller operations may be affected more. Permittees most affected by the guidelines would be those with small one-pasture allotments where there is continuous, season-long grazing. Continuous, season long grazing is allowed to occur only when it has been demonstrated to be consistent with achieving a healthy, properly functioning ecosystem. Season-long grazing is not inherently inappropriate, if grazing intensity and livestock distribution are managed properly (CAST, 1996) It however may be necessary to defer grazing during periods of plant growth and regrowth. As a result the permittee may be burdened financially by having to lease private pasture, improve the private lands, fence to create an additional pasture or partner with another allotment. There is also the additional costs associated with the handling of livestock for gathering and transporting.

WILD HORSES

The impacts to the Socorro wild horse herd from the implementation of the Fallback Alternative would be similar to the No Action Alternative, with the exception that the RMP decision would be in conformance with the fallback standard for rangeland health. Based on the monitoring data, the area is in fair to good condition with a static trend and currently meets the standard. The existing resource condition would improve as in the No Action Alternative as long as the AML of 50 is maintained and balanced with livestock grazing and other uses.

The impacts to the Farmington wild horse herd would be similar to the No Action Alternative.

WILDLIFE

The standards and guidelines under the Fallback Alternative are the most restrictive, and would focus management activities on more acres of wildlife habitat protection than the other alternatives.

Implementing the national fallback standards and guidelines would benefit wildlife in the short and long term in both upland and riparian areas. The improvement of riparian habitats currently functioning at risk would benefit wildlife, since these areas are the most diverse and productive areas. Over the long term, the Fallback Alternative would help ensure that site-specific, as well as landscape-level habitat needs are considered when developing AMPs. The Fallback Alternative would allow for a slight increase in actual AUMs over the long term, but would consider and protect critical wildlife resources. The use of livestock as a management tool would be allowed to restore and maintain sustainable habitats, increase biological diversity and vegetative productivity, and promote properly functioning uplands and riparian areas.

By managing rangeland to restore and maintain natural ecosystems, the Fallback Alternative would benefit wildlife in the long term by increasing or improving the amount and quality of habitat. With restored naturally-functioning ecosystems comes an increase in biological diversity. Greater biological diversity would allow more opportunities for most species to meet basic life requirements.

36 - New Mexico and Arizona Plateaus and Mesas

Big Game

Long-term benefits to big game would occur from implementing the Fallback Alternative, and improving upland habitat currently in poor condition or not meeting the standard due to grazing practices. Mule deer and elk would be the primary big game species benefitting from these actions. There would be an increase in the deer population through improving the quality and quantity of browse on upland sites, and creating new fawning areas. Elk are currently increasing in numbers; however, they would be controlled by the NM DGF.

The quality of habitat would improve over the long term for riparian-dependent big game species (turkey, deer, and furbearers) due to the strong emphasis on riparian management. However, due to other limiting factors (drought) and hunting regulations no measurable increase in populations would be expected.

Allowing public access while controlling off-highway vehicle use and protecting wildlife habitat is a major concern for most field offices. Off-highway vehicle use can potentially increase the number of roads on public land, resulting in degradation of big game habitat and increased wildlife harassment and displacement. Under this alternative and associated standards for erosion and wildlife habitat, road closures would continue.

Upland Game and Nongame

Upland sites would improve very rapidly over the short and long term under the Fallback Alternative, benefitting most upland wildlife species. The continued construction of water developments where needed would favor upland game bird species.

Waterfowl/Fisheries

Habitat quality for resident fisheries and waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Public land-resident fisheries habitat over the long term would be improved.

37 - San Juan River Valley Mesas and Plateaus

Long-term benefits to big game would occur from the Fallback Alternative by utilizing the most restrictive guidelines on livestock grazing, and improving upland habitat currently in poor condition or not meeting the standard due to grazing practices.

The quality of habitat would improve over the long term for riparian-dependent big game species (turkey, deer, and furbearers) due to the strong emphasis on riparian management. However, due to other limiting factors (drought) and hunting regulations no measurable increase in populations would be expected.

Allowing public access while controlling off-highway vehicle use and protecting wildlife habitat is a major concern for most field offices. Off-highway vehicle use can potentially increase the number of roads on public land, resulting in degradation of big game habitat and increased wildlife harassment and displacement. Under this alternative and associated standards for erosion and wildlife habitat, road closures would continue.

Upland Game and Nongame

Upland sites would improve over the long term, due to land treatments and proper grazing practices, resulting in benefits for most upland wildlife species. The continued construction of water developments would favor upland game bird species.

Special management for raptor nesting areas would continue. Small changes in the overall landscape while protecting nests sites would benefit raptors by increasing their prey base.

Waterfowl/Fisheries

Habitat quality for resident fisheries and waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Public land-resident fisheries habitat over the long term would be improved.

39 - Arizona and New Mexico Mountains

Big Game

The BLM manages very little public land within this MLRA. Under this alternative, there are several areas where the standards and guidelines would improve wildlife habitat. Upland improvement projects along with controlled grazing would improve wildlife habitat for big game species over the long term. The Southwestern part of the state has a very active fire season. These natural events can be beneficial to resident elk herds by creating open meadow areas and increasing the amount of forage.

Waterfowl/Fisheries

Habitat quality for resident fisheries and waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Public land-resident fisheries habitat over the long term would be improved.

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41 - Southeastern Arizona Basin and Range

A small percentage of this MLRA exists on BLM lands. Upland habitat would be improved under this alternative, thereby improving Coues' whitetail deer habitat in the southwestern corner of New Mexico.

42 - Southern Desertic Basins, Plains, and Mountains

Long-term benefits to big game would occur under the Fallback Alternative by utilizing the most restrictive guidelines for livestock grazing, and improving upland habitat currently in poor condition or not meeting the standard due to grazing practices.

Big Game

This alternative would rectify historic land use practices that have caused problems such as the dewatering of streams and springs, and displacement of big game species. Implementation of proper grazing practices, vegetative land treatments, increased water developments, and cooperative management efforts would have long- term benefits to big game habitat. Natural events (fire, flooding, etc.) that create a mosaic within the landscape and diversify the plant community would also benefit wildlife. There would be a slight increase in the deer population from improving the quality and quantity of browse on upland sites, and creating new fawning areas. Pronghorn antelope populations are expected to increase over the long term due to improved habitat conditions and transplants. Habitat conditions would improve over the long term due to improved ecological conditions and movement patterns. Antelope transplants would be expected to continue in cooperation with the NMDGF and land owners.

Competition for food and space between mule deer and the Iranian ibex would continue under this alternative. Oryx would continue to move off the White Sands Missile Range and may potentially displace mule deer and antelope because of their size and aggressive behavioral patterns.

The quality of habitat would improve over the long term for riparian-dependent big game species (turkey, deer, and furbearers) due to the strong emphasis on riparian management. However, due to the small percentage of riparian habitat located on public land and other limiting factors affecting big game populations, no large change in populations would be expected.

Upland Game and Nongame

Upland sites would improve in the short term and fully recover in the long term, from land treatments and proper grazing practices, benefitting scaled quails, and Gambel's quail, and dove populations. The continued construction of water developments where needed would favor upland game bird species.

Waterfowl/Fisheries

Habitat quality for resident fisheries and waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Public land-resident fisheries habitat would be improved over the long term.

48 - Southern Rocky Mountains

A small percentage of this MLRA exists on BLM lands. Upland habitat would improve under this alternative, resulting in the improvement of some wildlife habitat within the MLRA.

51 - High Intermountain Valleys

Big Game

Long-term benefits to big game would occur from the Fallback Alternative by utilizing the most restrictive guidelines on livestock grazing, and improving upland habitat currently in poor condition or not meeting the biotic standard due to grazing practices. Rocky Mountain elk would continue to be a key wildlife species within the Taos field office. Critical winter range would be improved through implementation of the Fallback standards and guidelines.

Upland Game and Nongame

Upland sites would improve over the long term from land treatments and proper grazing practices, resulting in a benefit for scaled quail, mourning dove, Merriam's turkey, numerous raptors, and migratory bird populations. The continued construction of water developments would favor upland game bird species.

Waterfowl/Fisheries

Habitat quality for resident fisheries and waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Public land - resident fisheries habitat over the long term would be improved.

70 - Pecos/Canadian Plains and Valleys

Big Game

Short-and-long term benefits to big game would result from the Fallback Alternative by utilizing the most restrictive guidelines on livestock grazing, and improving upland habitat currently in poor condition or not meeting the biotic standard due to grazing practices. The implementation of guidelines which identify proper grazing practices, vegetative land treatments, and water developments would improve wildlife habitat for big game species over the long term. Natural events (fire, flooding, etc.) That create a mosaic within the landscape and diversify the plant community would also benefit wildlife. There would be a slight increase in the deer population through improving the quality and quantity of browse on upland sites, and creating new fawning areas. Pronghorn antelope populations are expected to increase over the long term due to improved habitat conditions and transplants. Habitat conditions would improve over the long term due to improved ecological conditions and movement patterns. Antelope transplants would be expected to continue in cooperation with the NMDGF and other land owners.

Upland Game and Nongame

Upland sites would improve over the long term from land treatments and proper grazing practices, resulting in a benefit for scaled quail, bobwhite quail, mourning dove, numerous raptors, and migratory bird populations. The continued construction of water developments where needed would favor upland game bird species.

With the current regional emphasis on the decline of lesser prairie chicken populations, this alternative would have short-and-long term benefits on approximately 272,000 acres of lesser prairie chicken habitat that would meet special habitat requirements. Recent droughty conditions along with year-long grazing has impacted lesser prairie chicken habitat from the removal of residual growth on bluestems. Most allotments within the Caprock WHA allow for year-long grazing and therefore may exceed the utilization levels required for proper nesting habitat. Under this alternative, wildlife resource conflicts between grazing and lesser prairie chickens would be minimized with the emphasis placed on native populations and their habitat, especially during drought years.

Waterfowl/Fisheries

Habitat quality for resident fisheries and waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Public land-resident fisheries habitat over the long term would be improved.

77 - Southern High Plains

Big Game

The BLM manages very little public land within this MLRA. However, this alternative would improve wildlife habitat by establishing strict livestock management-guidelines compatible with wildlife resources.

Upland Game and Nongame

Upland sites would improve in the short and long term under this alternative, resulting in a benefit for most upland game and nongame species.

Waterfowl

Habitat quality for waterfowl would generally change in response to the changes in overall riparian and aquatic habitats. Public land resident fisheries habitat over the long term would be improved.

SPECIAL STATUS SPECIES

Under the Fallback Alternative, the focus of management and application of grazing guidelines would occur on public lands not meeting the biotic and upland standards, and public land not meeting the upland standard due to current grazing practices. It is more efficient to manage an entire pasture than to manage a small portion of a pasture. Managing the smaller portion would likely incur large costs for fencing, establishment of water sources, and other

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management facilities. These areas are contained primarily within the desert biome of MLRAs 36, 37, and 42, and the grassland biome of MLRA 70. There would be benefits to a portion of the 95 species occurring in the improved areas of the desert and grassland biomes managed under this alternative. Of concern when implementing livestock grazing practices is that the approximately 4,285,000 acres in areas of late-seral and PNC ecological status not decline due to redistribution of grazing patterns. These areas, in many cases, provide suitable habitat to support special status species with high-seral habitat requirements.

Also of concern in this alternative are the approximately 112 riparian segments that do not meet the proposed standards, due, at least in part, to livestock grazing. The greatest benefits to special status species resulting from this alternative would be the improvement of riparian conditions on 20 riparian segments in the short term and 58 riparian segments in the long term. Many of the 76 special status species associated with public land riparian areas and their aquatic systems would benefit from the improvement in riparian condition.

Areas that have passed the threshold of improvement have lost the capability to recover toward PNC within the long term of this analysis, even in the absence of grazing. In some cases, the PNC has shifted to a different community. Even with chemical or mechanical manipulation, these areas may never re-establish a community like the lost native community. This is due to the change in ecosystem functionality that occurs with the combined impacts of soil loss and vegetative community shifts associated with major disruptions caused by past land use practices and climate change. Examples of these are former desert grasslands which are now mesquite sand dunes and creosote bush/desert pavement communities of the Chihuahuan Desert in MLRA 42. Special status species that formerly used these areas will have differing abilities to recolonize these habitats as the relative condition improves with subsequent management. Some species, such as obligate grassland species like Baird's sparrow, may never be able to return to former habitats for these reasons. Other areas, such as the shinnery oak/dunes areas of MLRAs 42 and 70 retain profound capability to return to previous grassland dominance, and the ability to support grassland species, such as the lesser prairie chicken.

RECREATION

Recreational visitor use would continue to increase, especially in areas where urban visitors recreate. Developed recreation sites are expected to have increased use. The recreational use levels on a statewide basis would not be expected to be impacted by the standards or the livestock grazing guidelines.

The Fallback Alternative would provide for increased management of off-highway vehicle use and less road proliferation on 4,600 acres in MLRA 36 and 8,000 acres in MLRA 42. Although this area may be important to off-highway vehicle visitors frequenting the area, on a statewide basis it represents a small percent of the public land acreage.

Increased recreation management would occur on 10,600 acres in MLRA 36 and 500 acres in MLRA 37 where recreational activities are keeping the area from meeting the upland standard. Additionally, there are 12,600 acres in MLRA 36 not meeting the biotic standard due to recreation activities.

Considering that there may be overlap on many of the acres identified as having recreation conflicts with the standards, the additional restrictions would occur on less than 33,700 acres. This would not be a detectable impact on the recreational use of the public lands on a statewide basis.

It is expected that the present conflicts between livestock use and the developed area at the Wild Rivers Recreation Area would be resolved over the next five years. As additional recreational sites are developed, livestock would be expected to be excluded.

The BLM would be expected to resolve livestock grazing conflicts on riparian areas. In the long term, an additional 58 riparian segments would be expected to improve in condition, improving the quality of the visit for recreationists on the public lands.

Not all the acres are failing to meet the standards due to livestock grazing. However, many acres would be expected to have an improved quality of the visit for recreational visitors due to the improved native vegetation and animal communities.

WILDERNESS

The Fallback Alternative standards place emphasis only on the natural systems, which would tend to speed up the improvement in the natural systems.

Where sites that are not meeting the standard are included in WAs or WSAs, they would be expected to be a high priority for improved management. The review of WAs and WSAs to determine if they meet the standards should help determine what management changes are needed. However, in WAs and WSAs the Wilderness Act and BLM management guidelines for these areas would limit some of the tools for management. For example, the range improvements that are normally applied to support improved livestock grazing management and land treatment techniques may not be permitted in WAs and in WSAs. However, if the WAs and WSAs meet the standards, there would be no impact on wilderness values.

CULTURAL RESOURCES

Under the Fallback Alternative, emphasis on stabilizing soils, reducing erosion, restoring riparian-wetland areas and streambank stability, providing periods of rest to allow for plant growth or regrowth, and locating of new, and relocating of existing facilities away from riparian areas would all contribute to a reduction in the rate of damage to cultural resources.

PALEONTOLOGY

Under this alternative, emphasis on stabilizing soils reducing erosion, restoring riparian-wetland areas and streambank stability, providing periods of rest to allow for plant growth or regrowth, and locating new, and relocating of existing facilities away from riparian areas would all contribute to a reduction in the rate of damage to paleontological resources.

REALTY/LAND USE

Impacts on realty and land use actions would be same as for the Proposed Action.

MINERAL RESOURCES

Impacts on mineral resources would be the same for the Proposed Action.

NATIVE AMERICAN CULTURAL ISSUES

Native American concerns would continue to be protected under the laws as outlined in Chapter 3. Emphasis on the use of native plant species and improved habitat would ensure continued or enhanced availability of plant and animal species traditionally used by Native Americans.

ECONOMIC

Under Fallback alternative and the scenario that all ranches stayed in business, the least economic impact was when there were no AUM reductions. The initial loss of economic activity (Table 4.3a, Table 4.3b) was almost $7.9 million of which approximately a $1.5 million loss in personal income. An initial loss of 56 FTEs was estimated under this alternative. As compared to the $24 million loss when 20% of AUMs were reduced and 22% of the ranches converted to real estate. These impacts were for a single year and were aggregated over a seven year period to quantify the cumulative impacts to year seven.

Year 10 cumulative impacts included an authorization of additional AUMs, which allowed the ranch unit to restock any AUMs that were reduced plus 1/3 of the AUMs toward preference. The Fallback alternative minimum impact after 10 years occurred when none of the ranches converted to real estate, no AUM reductions, and the ranch financed the improvements. The greatest economic loss occurred when there was a 20% reduction in AUMs and BLM financing of improvements under the scenario of 22% of ranches not meeting standard and converting to real estate. After the tenth year of implementation of the guidelines, the negative impacts due to implementation of improvements lessened to only maintenance and repairs under this alternative.

In year 14 under the Fallback alternative, it was assumed another 1/3 of preference AUMs were authorized on the BLM permits/leases that had previously not met the standard. Minimum impacts (Table 4.2a) occurred when was a 20% reduction of AUMs and the rancher funded 100% of the improvements. These impacts included: losses of almost $48 million in economic activity, losses of $15 million in personal income, and a loss of 5.74 FTEs. The greatest economic loss occurred when 22% of the

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Table 4.3a: Fallback Alternative - Economic Impacts (cumulative)

All range livestock- no ranches converting to real estate

Year 1	**Fallback, No BLM AUM Reduction**		**Fallback 20% BLM AUM Reduction**	
Capital Outlay	50 & 100% BLM	100% Rancher	50 & 100% BLM	100% Rancher
Economic Activity	(7,870,000)	(7,859,000)	(15,004,000)	(14,992,000)
Personal Income	(1,537,000)	(1,826,000)	(2,648,000)	(2,967,000)
Employment	(56.02)	(51.84)	(130.29)	(125.69)
Year 14	**Fallback, No BLM AUM Reduction**		**Fallback 20% BLM AUM Reduction**	
Capital Outlay	50 & 100% BLM	100% Rancher	50 & 100% BLM	100% Rancher
Economic Activity	(55,828,000)	(55,720,000)	(48,866,000)	(48,747,000)
Personal Income	(12,410,000)	(15,305,000)	(11,685,000)	(14,879,000)
Employment	(23.67)	(19.49)	(10.34)	(5.74)
Year 21	**Fallback, No BLM AUM Reduction**		**Fallback 20% BLM AUM Reduction**	
Capital Outlay	50 & 100% BLM	100% Rancher	50 & 100% BLM	100% Rancher
Economic Activity	(7,890,000)	(7,782,000)	60,075,000	60,195,000
Personal Income	(5,928,000)	(8,823,000)	3,964,000	770,000
Employment	33.07	37.25	46.40	51.00

Table 4.3b: Fallback Alternative - Economic Impacts (cumulative)

All range livestock ranches w/22% converting to real estate

Year 1	**Fallback, No BLM AUM Reduction**		**Fallback 20% BLM AUM Reduction**	
Capital Outlay	50 & 100% BLM	100% Rancher	50 & 100% BLM	100% Rancher
Economic Activity	(18,166,000)	(18,157,000)	(23,954,000)	(23,945,000)
Personal Income	(3,042,000)	(3,268,000)	(3,941,000)	(4,190,000)
Employment	(163.28)	(160.06)	(224.33)	(220.75)
Year 14	**Fallback, No BLM AUM Reduction**		**Fallback 20% BLM AUM Reduction**	
Capital Outlay	50 & 100% BLM	100% Rancher	50 & 100% BLM	100% Rancher
Economic Activity	(153,112,000)	(153,028,000)	(163,819,000)	(163,726,000)
Personal Income	(26,090,000)	(28,348,000)	(28,014,000)	(30,505,000)
Employment	(121.71)	(118.49)	(131.94)	(128.36)
Year 21	**Fallback, No BLM AUM Reduction**		**Fallback 20% BLM AUM Reduction**	
Capital Outlay	50 & 100% BLM	100% Rancher	50 & 100% BLM	100% Rancher
Economic Activity	(92,790,000)	(92,706,000)	(69,814,000)	(69,721,000)
Personal Income	(16,701,000)	(18,959,000)	(13,643,000)	(16,135,000)
Employment	(42.03)	(38.81)	(52.26)	(48.68)

ranches converted to real estate and there was a 20% reduction of AUMs and the BLM funded the cost of improvements (Table 4.3b). These impacts included: a loss of almost $164 million in economic activity, a loss of $28 million in personal income, and a loss of almost 132 FTEs.

Year 21 was the final year of analysis; it was assumed that the allotment should have achieved an ecological condition surpassing the standards and the allotment would be operated with full preference AUMs. The economic impacts varied widely dependant upon the assumptions, and options analyzed. It was recognized that the actual impacts would be in the range between the minimum and maximum economic impacts estimated, since there would be a wide variety of allotment conditions, improvement construction, financing of the improvements, and rancher reactions. Therefore, it was believed that the economic impacts would actually be in a range for this alternative (Tables 4.3a and 4.3b). An important assumption in the analysis was that allotments not meeting the standard would be operated at preference AUMs at the end of 21 years, without this assumption all impacts would be negative.

Under the Fallback alternative, the economic impacts were estimated to be between a loss in economic activity of $92.7 million and a gain of $60 million depending upon a combination of scenarios, assumptions, and options. The range for personal income would be expected to be between a loss of about $19 million and a gain of almost $4 million. For jobs the range is estimated to be between a loss of almost 52 FTEs and a gain of 51 FTEs.

HUMAN DIMENSION

Financial, Social and Cultural Impact Analyses

The Fallback Alternative has four standards, all of which are physical and biological standards. The Fallback Standards do not mention the Human Dimension Standard.

Financial

Based on the Central Mountain analysis, the public land ranches not meeting the standards, that have a heavy dependency on public lands and are highly leveraged will be most effected by the BLM management changes. With additional required constraints through guideline implementation, these ranchers may not be able to sustain their ranch operations into the next year. With the reduced ranch operations, the affected rancher will be less able to meet their overhead expenses, especially given their increased costs of improvements and maintenance.

Faced with short term financial loss from the Fallback Alternative, the rancher's options to reduce substantial financial risk are:

- find additional off ranch income
- find private land to rent for livestock, if available
- large ranches could sell off their assets
- acquire other government lands to use, if available
- reduce size of operations
- sell their land and water rights (liquidate)

Financial Threshold Analysis

The financial threshold analysis for the Central Mountain Region shows that, based on the 10 year average, that the extra-small ranch not meeting the standard would no longer meet the Financial Threshold for Production; therefore, grazing on the BLM permit portion would not be financially viable, at least for the short-term. The small, medium, and large ranches not meeting the standard could still meet the Financial Threshold for Production, but at a much reduced level (losses of gross margin of 82.5%, 44%, and 31% respectively), and none of these ranches not meeting the standard would be able to meet the Financial Threshold for Profitability. See Appendix D.

As a result of management changes under this alternative, if affected Central Mountain Region ranchers must bear the cost of improvements, and/or reduce the BLM permit by 20% then the extra-small, small, medium and large ranches not meeting the standard. would minimize losses by discontinuing grazing on the affected BLM permit, at least in the short term.

In the short term, this alternative will be more adverse financially to the affected ranchers than either the County or RAC Alternatives. In addition, financial impacts to the individual rancher, local governments and agencies would potentially lose taxes and fees from reduced number of livestock, private property and improvements.

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In the long term, the potential exists for affected ranches to be financially improved. However, the improvement is less than under the RAC and County Alternatives.

Social

Under the Fallback Alternative, a potential exists for ranches with public lands not meeting the standard to become more financially at risk in the short term by implementation of the guidelines. The additional financial stress could result in additional family stress and, in some cases, ranchers going out of business.

The economic analysis indicates that the short term employment adjustments could range from a loss of 52 to 224 jobs. Jobs that are reduced from the affected ranches could place additional stress on the ranchers. The additional stress could originate from increased operational costs, such as removal of livestock from BLM lands, extra stress of relocating the cattle, finding available pastures and associated costs, would be an increased burden to the family ranch in the short term. The extra stress from ranch operations and the need to find another job or face increased poverty would increase family strife, as documented in empirical studies (Blehar, 1979, Fagin and Little, 1984, Borrero, 1980, Larson, 1984, Brenner, 1975). As a result rural communities in New Mexico may experience additional social disruption.

The Range Reform '94 Draft EIS briefly raised the potential effects on rural communities:

> Generally, small isolated communities are more vulnerable...due to weaker links to centers of political and economic influence... these smaller communities are more likely to experience unemployment, increased poverty, and social disruption in the face of policy shifts in management policy.

When ranchers go out of business, sell base property for housing development, and are not replaced, the loss of social mobility, erosion of the agrarian way of life, and out-migration would lead to reduced family spending and secondary effects on businesses, infrastructure and services (schools, medical care, emergency services, environmental services, etc.).

Cultural

This alternative could have adverse impacts on ranches with public lands not meeting the standard. Most public land ranches in New Mexico are family run businesses. The effect of one person losing his or her connection to the land ripples throughout the communities. The communities of the arid southwest are made up of people who share beliefs and values which are, if not embodied by, closely linked to the culture of ranching. As the individuals who ranch leave their lands because of increased economic pressures and/or the demand for changing uses, the values of the communities as a whole begin to unravel in the descent toward a less centered, less self-reliant, and more homogenous monoculture.

The financial and social impacts could have adverse effects on ranch traditions, heritage, attitudes, beliefs and values. The culture of ranching depends on the interaction of the ranchers lives with the land and livestock. Any one of these components taken away dismantles the entire weave. To protect the irreplaceable cultures, the weave of people and land must remain intact in those traditional forms of interaction. Cultural values of self sufficiency, hard work, and other traits, such as community cohesion, collaboration and leadership associated with agrarian communities, could be altered. As discussed in chapter three, the sense of place with its association with a sense of well-being and community stability would be further eroded for some of the ranching communities.

In summary, for the short term and long term, the potential for adverse financial, social and cultural impacts from the Fallback Alternative on ranches and rural New Mexico is generally more adverse than either the RAC or County Alternative.

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COMMON TO ALL ALTERNATIVES

SMALL BUSINESS REGULATORY IMPACT ANALYSIS

The actions analyzed in this EIS are not regulation or rules as defined in Section 1. (a) of Executive Order 12291 which states "Regulation" or "rule" means "an agency statement of general applicability and future effect designed to implement, interpret, or prescribe law or policy or describing the procedure or practice requirements of an agency, but does not include..." The change in the grazing regulations (a regulatory change) was analyzed in the Reform '94 EIS completed by the Washington Office. The results of that analysis are contained in a document titled "Range Reform Small Entity Flexibility Analysis" dated March 23, 1994. During its preparation, the Small Business Administration was provided the opportunity to comment on the document. They found the document was adequate.

PRIVATE PROPERTY RIGHTS ANALYSIS

Executive Order 12630 of March 15, 1988 gives direction on Governmental Actions and Interference With Constitutionally Protected Property Rights. Further, the TGA and the FLPMA are laws providing more specific guidance on public land management related to property rights and public land management.

Executive Order 12630 of March 15, 1988 Governmental Actions and Interference With Constitutionally Protected Property Rights states:

> By the authority vested in me as President by the Constitution and laws of the United States of America, and in order to ensure that government actions are undertaken on a well-reasoned basis with due regard for fiscal accountability, for the financial impact of the obligations imposed on the Federal government by the Just Compensation Clause of the Fifth Amendment, and for the Constitution, it is hereby ordered as follows:
>
> Section 1. Purpose. (a) The Fifth Amendment of the United States Constitution provides that private property shall not be taken for public use without just compensation. Government historically has used the formal exercise of the power of eminent domain, which provides orderly processes for paying just compensation, to acquire private property for public use. Recent Supreme Court decisions, however, in reaffirming the fundamental protection of private property rights provided by the Fifth Amendment and in assessing the nature of governmental actions that have an impact on constitutionally protected property rights, have also reaffirmed that governmental actions that do not formally invoke the condemnation power, including regulations, may result in a taking for which just compensation is required.
>
> (b) Responsible fiscal management and fundamental principles of good government require that government decision-makers evaluate carefully the effect of their administrative, regulatory, and legislative actions on constitutionally protected property rights, Executive departments and agencies should review their actions carefully to prevent unnecessary takings and should account in decision-making for those takings that are necessitated by statutory mandate.
>
> (c) The purpose of this Order is to assist Federal departments and agencies in undertaking such reviews and in proposing, planning, and implementing actions with due regard for the constitutional protections provided by the Fifth Amendment and to reduce the risk of undue or inadvertent burdens on the public fisc resulting from lawful governmental action. In furtherance of the purpose of this Order, the Attorney General shall, consistent with the principles stated herein and in consultation with the Executive departments or agencies promulgate Guidelines for the Evaluation of Risk and Avoidance of Unanticipated Takings to which each Executive department or agency shall refer in making the evaluations required by this Order or in otherwise taking any action that is subject of this Order. The Guidelines shall be promulgated no later than May 1, 1988, and shall be disseminated to all units of each Executive department and agency no later than July 1, 1988. The Attorney General

shall, as necessary, update these guidelines to reflect fundamental changes in takings law occurri- as a result of Supreme Court decisions.

Section 2. *Definitions.* For the purpose of this Order: (a) "Policies that have takings implications" refers to Federal regulations, proposed Federal regulations, proposed Federal legislation, comments on proposed Federal legislation, or other Federal policy statements that, if implemented or enacted, could effect a taking, such as rules and regulations that propose or implement licensing, permitting, or other condition requirements or limitations on private property use, or that require dedications or exactions from owners of private property. "Policies that have takings implications" does not include:

(1) Actions abolishing regulations discontinuing governmental programs, or modifying regulations in a manner that lessens interference with the use of private property;

(2) Actions taken with respect to properties held in trust by the United States or in preparation for or during treaty negotiations with foreign nations.

(3) Law enforcement actions involving seizure, for violations of law, of property for forfeiture or as evidence in criminal proceedings;

(4) Studies or similar efforts or planning activities;

(5) Communications between Federal agencies or departments and State or local land-use planning agencies regarding planned or proposed State or local actions regulating private property regardless of whether such communications are initiated by a Federal agency or department or are undertaken in response to an invitation by the State or local authority;

(6) The placement of military facilities or military activities involving the use of Federal property alone; or

(7) Any military or foreign affairs function (including procurement functions thereunder) but not including the U.S. Army Corps of Engineers civil works program.

(b) Private property refers to all property protected by the Just Compensation Clause of the Fifth Amendment.

(c) "Actions" refers to proposed Federal regulations, proposed Federal legislation, comments on posed Federal legislation, application of Federal regulations to specific property, or Federal governmental actions physically invading or occupying private property, or other policy statements or actions related to Federal regulations or direct physical invasion or occupancy, but does not include:

(1) Actions in which the power of eminent domain is formally exercised;

(2) Actions taken with respect to properties held in trust by the United States or in preparation for or during treaty negotiations with foreign nations;

(3) Law enforcement actions involving seizure, for violations of law, of property for forfeiture or as evidence in criminal proceedings;

(4) Studies or similar efforts or planning activities;

(5) Communications between Federal agencies or departments and State or local land-use planning agencies regarding planned or proposed State or local actions regulating private property regardless of whether such communications are initiated by a Federal agency or department or are undertaken in response to an invitation by the State or local authority;

(6) The placement of military facilities or military activities involving the use of Federal property alone; or

(7) Any military or foreign affairs function (including procurement functions thereunder), but not including the U.S. Army Corps of Engineers civil works program.

Sec 3. General Principles. In formulating or implementing policies that have takings implications, each Executive department and agency shall be guided by the following general principles;

(a) Governmental officials should be sensitive to, anticipate, and account for, the obligations imposed by the Just Compensation Clause of the Fifth Amendment in planning and carrying out governmental actions so that they do not result in an imposition of unanticipated or undue additional burdens on the public fisc.

(b) Actions undertaken by governmental officials that result in a physical invasion or occupancy of private property, and regulations imposed on private property that substantially affect its value or use may constitute a taking of property. Further, governmental action may amount to a taking even through the action results in less than a complete deprivation of all use or value, or of all separate and distinct interests in the same private property and even if the action constituting a taking is temporary in nature.

(c) Government officials whose actions are taken specifically for the purposes of protecting public health and safety are ordinarily given broader latitude by courts before their actions are considered to be takings. However, the mere assertion of a public health and safety purpose is insufficient to avoid a taking. Actions to which this Order applies asserted to be for the protection of public health and safety, therefor, should be undertaken only in response to real and substantial threats to public health and safety, be designed to advance significantly the health and safety purpose, and be no greater than is necessary to achieve the health and safety purpose.

(d) While normal governmental process do not ordinarily effect takings, undue delays in decision-making during which private property use if interfered with carry a risk of being held to be takings. Additionally, a delay in processing may increase significantly the size of compensation due if a taking is later found to have occurred.

(e) The Just Compensation Clause is self-actuating, requiring that compensation be paid whenever governmental action results in a taking of private property regardless of whether the underlying authority for the action contemplated a taking or authorized the payment of compensation. Accordingly, government actions that may have a significant impact on the use or value of private property should be scrutinized to avoid undue or unplanned burdens on the public fisc.

Sec 4. *Department and Agency Action.* In addition to the fundamental principles set forth in Section 3, Executive departments and agencies shall adhere, to the extent possible permitted by law, to the following criteria when implementing policies that have taking implications:

(a) When an Executive department or agency requires a private party to obtain a permit in order to undertake a specific use of or action with respect to private property, any conditions imposed on the granting of a permit shall:

(1) Serve the same purpose that would have been serve by a prohibition of the use or action; and

(2) Substantially advance that purpose;

(b) When a proposed action would place a restriction on a use of private property, the restriction imposed on the use shall not be disproportionate to the extent to which the use contributes to the overall problem that the restriction is imposed to redress.

(c) When a proposed action involves a permitting process or any other decision-making process that will interfere with, or otherwise prohibit , the use of private property pending the completion of the process, the duration of the process shall be kept to the minimum necessary.

(d) Before undertaking any proposed action regulating private property use for the protection of public health or safety, the Executive department or agency involved shall, in internal deliberative documents and any submissions to the Director of the Office of Management and Budget that are required:

(1) Identify clearly, with as much specificity as possible, the public health or safety risk created by the private property use that is the subject of the proposed action;

(2) Establish that such proposed action substantially advances the purpose of protecting public health and safety against the specifically identified risk;

(3) Establish to the extent possible that the restrictions imposed on the private property are not disproportionate to the extent to which the use contributes to the overall risk; and

(4) Estimate, to the extent possible, the potential cost to the government in the event that a court later determines that the action constituted a taking.

In instances in which there is an immediate threat to health and safety that constitutes an emergency requiring immediate response, this analysis may be done upon completion of the emergency action.

Sec. 5. Executive Department and Agency Implementation. (a) The head of each Executive department and agency shall designate an official to be responsible for ensuring compliance with this Order with respect to the actions of that department or agency.

(b) Executive departments and agencies shall, to the extent permitted by law, identify the takings implications of proposed regulatory actions and address the merits of those actions in light of the identified takings implications, if any, in all required submissions made to the Office of Management and Budget. Significant takings implications should also be identified and discussed in notices of proposed rule-making and messages transmitting legislative proposals to the Congress, stating the departments' and agencies' conclusions on the takings issues.

(c) Executive departments and agencies shall identify each existing Federal rule and regulation against which a takings award has been made or against which a takings claim is pending including the amount of each claim or award. A "takings" award has been made or a "takings" claim pending if the award was made, or the pending claim brought, pursuant to the Just Compensation Clause of the Fifth Amendment. An itemized compilation of all such awards made in Fiscal Years 1985, 1986, and 1987 all of such pending claims shall be submitted to the Director, Office of Management and Budget, on or before May 16, 1988.

(d) Each Executive department and agency shall submit annually to the Director, Office of Management of Budget, and to the Attorney General an itemized compilation of all awards of just compensation entered against the United States for takings, including awards of interest as well as monies paid pursuant to the provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, 42 U.S.C. 4601.

(e)(1) The Director, Office of Management and Budget, and the Attorney General shall each, to the extent permitted by law, take action to ensure that the policies of the Executive departments and agencies are consistent with the principles, criteria, and requirements stated in Sections 1 through 5 of this Order, and the Office of Management and Budget shall take action to ensure that all takings awards levied against agencies are properly accounted for in agency budget submissions.

(2) In addition to the guidelines required by Section 1 of this Order, the Attorney General shall, in consultation with each Executive department and agency to which this Order applies, promulgate such supplemental guidelines as may be appropriate to the specific obligations of that department or agency.

Sec 6. *Judicial Review.* This Order is intended only to improve the internal management of the Executive branch and is not intended to create any right or benefit, substantive or procedural, enforceable at law by a party against the United States, its agencies, its officers, or any person.

The Taylor Grazing Act states:

> Section 1 [untitled] states in part: Nothing in this Act shall be construed in any way to diminish, restrict, or impair any right which has been heretofore or may be hereafter initiated under existing law validly affecting the public lands, and which is maintained pursuant to such law except as otherwise expressly provided in this Act, nor to affect any land heretofore or hereafter surveyed which, except for the provisions of this Act, would be a part of any grant to any State, nor as limiting or restricting the power or authority of any State as to matters within its jurisdiction.

Section 2 of the Act states in part: The Secretary of the Interior shall make provision for protection, administration, regulation, and improvement of such grazing districts as may be created under authority of the foregoing section, and he shall make such rules and regulations and establish such service, enter into such cooperative agreements, and do any and all things necessary to accomplish the purposes of this Act and to insure the objects of such grazing districts, namely to regulate their occupancy and use, to preserve the land and its resources from destruction or unnecessary injury, to provide for the orderly use, improvement, and development of the range;...

Sec. 3. The Secretary of the Interior is authorized to issue or cause to be issued permits to graze livestock on such grazing districts to such bona fide settlers, residents, and other stock owners under his rules and regulations are entitled to participate in the use of the range, upon the payment annually of reasonable fees in each case to be fixed or determined from time to time, and in fixing the amount of such fees the Secretary of the Interior shall take into account the extent to which such districts yield public benefits over and above those accruing to the users of the forage for livestock purposes. Such fees shall consist of a grazing fee for the use of the range, and a range-improvement fee which, when appropriated by the Congress, shall be available until expended solely for the construction, purchase,or maintenance of range improvement. Grazing permits shall be issued only to citizens of the United States or to those who have filed the necessary declarations of intention to become such, as required by the naturalization laws, and to groups, associations, or corporations authorized to conduct business under the laws of the State in which the grazing district is located. Preference shall be given in the issuance of grazing permits to those within or near a district who are landowners engaged In the livestock business, bona fide occupants of settlers, or owners of water or water rights, as may be necessary to permit the proper use of the lands, water, or water rights owned, occupied, or leased by them, except that until July 1, 1935, no preference shall be given in the issuance of such permits to any owner, - occupant, or settler, whose rights were acquired between January 1, 1934, and December 31, 1934, both dates inclusive, except that no permittee complying with the rules and regulations laid down by the Secretary of the Interior shall be denied the renewal of such permit, if such denial will impair the value of the grazing unit of the permittee, when such unit is pledged as security for any bona fide loan. Such permits shall be for a period of not more than ten years, subject to the preference right of the permittees to renewal in the discretion of the Secretary of the Interior, who shall specify from time to time numbers of stock and seasons of use. During periods of range depletion due to severe drought or other natural causes, or in the case of a general epidemic of disease, during the life of the permit, the Secretary of the Interior is authorized, in his discretion to remit, reduce, refund in whole or in part, or authorize postponement of payment of grazing fees for such depletion period so long as emergency exists: PROVIDED FURTHER, That nothing in this Act shall be construed or administered in any way to diminish or impair any right to the possession and use of water for mining, agriculture, manufacturing, or other purposes which has heretofore vested or accrued under existing law validly affecting the public lands or which may be hereafter initiated or acquired and maintained in accordance with such law. So far as consistent with the purposes and provisions of this Act, grazing privileges recognized and acknowledged shall be adequately safeguarded, but the creation of a grazing district or the issuance of a permit pursuant to the provisions of this Act shall not create any right title, interest, or estate in or to the lands. (43 U.S.C., sec. 315b).

Sec 4. Fences, wells, reservoirs, and other improvements necessary to the care and management of the permitted livestock may be constructed on the public lands within such grazing districts under permit issued by the authority of the Secretary, or under such cooperative arrangement as the Secretary may approve. Permittees shall be required by the Secretary of the Interior to comply with the provisions of law of the Sate within which the grazing district is located with respect to the cost and maintenance of partition fences. No permit shall be issued which shall entitle the permittee to the use of such improvements constructed and owned by a prior occupant until the applicant has paid to such prior occupant the reasonable value of such improvements to be determined under the rules and regulations of the Secretary of the Interior. The decision of the Secretary in such cases is to be final and conclusive. (43 U.S.C., sec. 315c).

Sec 15. The Secretary of the Interior is further authorized, in his discretion, where vacant, unappropriated, and unreserved lands of the public domain are so situated as not to justify their inclusion in any grazing district to be established pursuant to this Act, to lease any such lands for grazing purposes, upon such terms and conditions as the Secretary may prescribe: PROVIDED, That preference shall be given to owners, homesteaders, lessees, or other lawful occupants of contiguous lands to the extent necessary to permit proper use of such contiguous lands, except that when such isolated or disconnected tracts embrace seven hundred and sixty acres or less, the owners, homesteaders, lessees, or or other lawful occupants of lands contiguous thereto or concerning thereon shall have a preference right to lease the whole of such tract, during a period of ninety days after such tract is offered for lease, upon the terms and conditions prescribed by the Secretary: PROVIDED FURTHER, That when public lands are restored from a withdrawal, the Secretary may grant an appropriate preference right for a grazing lease, license, or permit to users of the land for grazing purposes under authority of the agency which had jurisdiction over the lands immediately prior to the time of their restoration. (43 U.S.C., sec. 315m)

The Federal Land Policy and Management Act states:

> Section 402: (d) All permits and leases for domestic livestock grazing issued pursuant to this section, with the exceptions authorized in subsection (e) of this section, on and after October 1, 1988, may incorporate an allotment management plan developed by the Secretary concerned in consultation with the lessees or permittees involved. Prior to that date, allotment management plans shall be incorporated in grazing permits and leases when they are completed. The Secretary concerned may revise such plans from time to time after such consultation.
>
> (e) Prior to October 1, 1988, or thereafter, in all cases where the Secretary concerned has not completed an allotment management plan or determines that an allotment management plan is not necessary for management of livestock operations and will not be prepared, the Secretary concerned shall incorporate in grazing permits and leases such terms and conditions as he deems appropriate for management of the permitted or leased lands pursuant to applicable law. The Secretary concerned shall also specify therein the numbers of animals to be grazed and the seasons of use and that he may reexamine the condition of the range at any time and, if he finds on reexamination that the condition of the range requires adjustment in the amount or other aspect of grazing use, that the permittee or lessee shall adjust his use to the extent that the Secretary concerned deems necessary. Such readjustment shall be put into full force and effect on the date specified by the Secretary concerned.
>
> (f) Allotment management plans shall not refer to livestock operations or range improvements on non-Federal lands except where the non-Federal lands are intermingled with, or, with the consent of the permittee or lessee involved, associated with, the Federal lands subject to the plan. The Secretary concerned under appropriate regulations shall grant to lessees and permittees the right of appeal from decisions which specify the terms and conditions of allotment management plans. The proceeding sentence of this subsection shall not be construed as limiting any other right of appeal from decisions of such officials.
>
> (g) Whenever a permit or lease for grazing domestic livestock is canceled in whole or in part, in order to devote the lands covered by the permit or lease to another public purpose, including disposal, the permittee or lessee shall receive from the United States a reasonable compensation for the adjusted value, to be determined by the Secretary concerned, of his interest in authorized permanent improvements placed or constructed by the permittee or lessee on lands covered by such permit or lease, but not to exceed the fair market value of the terminated portion of the permittee's or lessee's interest therein. Except in cases of emergency, no permit or lease shall be canceled under this subsection without two years' prior notification.
>
> (h) Nothing in this Act shall be construed as modifying in any way law existing on the date of approval of this Act with respect to the creation of right, title, interest or estate in or to public lands or lands in National Forests by issuance of grazing permits and leases.

Section 701. (a) Nothing in this Act, or in any amendment made by this Act, shall be construed as terminating any valid lease, permit, patent, right-of-way, or other land use right or authorization existing on the date of approval of this Act. . . .

(f) Nothing in this Act shall be deemed to repeal any existing law by implication.

(g) Nothing in this Act shall be construed as limiting or restricting the power and authority of the United States or-

> (1) as affecting in any way any law governing appropriation or use of, or Federal right to, water on public lands;
>
> (2) as expanding or diminishing Federal or State jurisdiction, responsibility, interests, or rights in water resources development or

control;

(3) as displacing, superseding, limiting, or modifying any interstate compact or the jurisdiction or responsibility of any legally established joint or common agency of two or more States or of two or more States and the Federal Government;

(4) as superseding, modifying, or repealing, except as specifically set fourth in this Act, existing laws applicable to the various Federal agencies which are authorized to develop or participate in the development of water resources or to exercise licensing or regulatory functions in relation thereto;

(5) as modifying the terms of any interstate compact;

(6) as a limitation upon any State criminal statute or upon the police power of the respective States, or as derogating the authority of a local police officer in the performance of his duties, or as depriving any State or political subdivision thereof of any right it may have to exercise civil and criminal jurisdiction on the national resource lands; or as amending, limiting, or infringing the existing laws providing grants of lands to the States.

(h) All actions by the Secretary concerned under this Act shall be subject to valid existing rights.

The Public Rangelands Improvement Act (PRIA) of 1978 states:

SEC. 2. (a) The Congress finds and declares that-

(1) vast segments of the public rangelands are producing less than their potential for livestock, wildlife habitat, recreation, forage, and water and soil conservation benefits, and for that reason are in an unsatisfactory condition;

(b) The Congress therefore hereby establishes and reaffirms a national policy and commitment to:

(1) inventory and identify current public rangelands conditions and trends as a part of the inventory process required by section 201(a) of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1711);

(2) manage, maintain and improve the condition of the public rangelands so that they become as productive as feasible for all rangeland values in accordance with management objectives and the land use planning process established pursuant to section 202 of the Federal Land Policy and Management Act (43 U.S.C. 1712);

SEC. 4. (a) Following enactment of the Act, the Secretary of the Interior and the Secretary of Agriculture shall update, develop (where necessary) and maintain on a continuing basis thereafter, an inventory of range conditions and record of trends of range conditions on the public rangelands, and shall categorize or identify such lands on the basis of the range conditions and trends thereof as they deem appropriate. Such inventories shall be conducted and maintained by the Secretary as a part of the inventory process required by section 201(a) of the Federal Land Policy and Management Act (43 U.S.C. 1711), and by the Secretary of Agriculture in accordance with section 5 of the Forest and Rangeland Renewable Resources Planning Act of 1974 (16 U.S.C. 1603): shall be kept current on a regular basis so as to reflect changes in range conditions; an shall be available to the public.

(b) The Secretary shall manage the public rangelands in accordance with the Taylor Grazing Act (43 U.S.C. 315-315(o)), the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701-1782), and other applicable law consistent with the public rangelands improvement program pursuant to this Act. Except where the land use planning process required pursuant to section 202 of the Federal Land Policy and Management Act (43 U.S.C. 1712) determines otherwise or the Secretary determines, and sets forth his reasons for this determination that grazing uses should be discontinued (either temporarily or permanently) on certain lands the goal of such management shall be to improve the range conditions of the pubic rangelands so that they become as productive as feasible in accordance with the rangeland management objectives established through the land use planning process, and consistent with the values and objectives listed in sections 2 (a) and (b) (2) of the Act.

SEC. 8. Sections 402 (d) and (e) (43 U.S.C. 1752 (d) and (e)) are hereby amended-

(a) by changing subsection (d) to read as follows:

"(d) All permits and leases for domestic livestock grazing issued pursuant to this section may incorporate an allotment management plan developed by the Secretary concerned. However, nothing in this subsection shall be construed to supersede any requirement for completion of court ordered environmental impact statements prior to development and incorporation of allotment management plans. If the Secretary concerned elects to develop an allotment management plan for a given area, he shall do so in careful and considered consultation, cooperation and coordination with the lessees, permittees, and landowners involved, the district grazing advisory boards established pursuant to section 403 of the Federal Land Policy and Management Act (43 U.S.C. 1753), and any State or States having lands within the area to be covered by such allotment management plan. Allotment management plans shall be tailored to the specific range condition of the area to be covered by such plan, and shall be reviewed on a periodic basis to determine whether they have been effective in improving the range condition of the lands involved or whether such lands can be better managed under the provisions of subsection (e) of this section. The Secretary concerned my revise or terminate such plans or develop new plans from time to time after such review and careful and considered consultation, cooperation and coordination with the parties involved. As used in this subsection, the terms 'court ordered environmental impact statement' and 'range condition' shall be defined as in the 'Public Rangelands Improvement Act of 1978'"

(b) by deleting in subsection (e) the words "Prior to October 1, 1988, or thereafter, in" and by inserting "In".

Analysis:

Executive Order 12630 refers to Federal regulations, proposed Federal regulations, proposed Federal legislation, comments on proposed Federal legislation, or other Federal policy statements that, if implemented or enacted, could effect a taking, such as rules and regulations that propose or implement licensing, permitting, or other condition requirements or limitations on private property use, or that require dedications or exactions from owners of private property. The laws specific to public land such as TGA, FLPMA and PRIA provide additional direction concerning livestock grazing management and existing property rights for public land management.

It is clear in reading the TGA that the management of livestock grazing on the public land does not create a property right, and that implementation of the Act should not interfere with recognized valid existing property rights. As long as proper procedures are followed, including due process provided to current grazing permittees/lessees, the BLM may limit or terminate grazing for valid purposes.

With passage of the FLPMA, there is Congressional direction that the BLM decides the appropriate use of Federal public land under multiple use criteria, and the BLM is not bound to provide for all uses, or even a single use, on all lands. Congress provided through FLPMA for management of livestock grazing on the basis of multiple use and sustained yield. When prudent, the BLM can cancel or modify livestock grazing. However, FLPMA requires that if livestock grazing is canceled in whole or in part, payment for the adjusted value of the ranchers interest in range improvements that are no longer needed and a 2-year notice of cancellation of the permit or lease, except in emergencies, will be provided to the rancher. No further compensation is authorized by FLPMA for permit or lease modification or cancellation.

The TGA and FLPMA both provide for protection of valid existing property rights while also providing for management of livestock grazing on the public land. Whatever property rights any party may have are not directly affected or compromised by proper management of the Federal public land. Therefore, it is not necessary to have concerns about potential "takings" in the establishment of Rangeland Health Standards and Livestock Grazing Guidelines. Accordingly, a takings assessment at this level (EIS/RMP Amendment) is not necessary.

WATER RIGHTS

New Mexico State Law 72-2-9. [Supervising apportionment of waters.] states:

> The state engineer shall have the supervision of the apportionment of water in the state according to the licenses issued by him and his predecessors and the adjudications of the courts.

The TGA and FLPMA both provide for protection of valid existing property rights including water rights. Whatever property rights including water rights any party may have are not directly affected or compromised by proper management of the Federal public land. For example,
the TGA says:

> That nothing in this Act shall be construed or administered in any way to diminish or impair any right to the possession and use of water for mining, agriculture, manufacturing, or other purposes which has heretofore vested or accrued under existing law validly affecting the public lands or which may be hereafter initiated or acquired and maintained in accordance with such law.

and FLPMA states:

> All actions by the Secretary concerned under this Act shall be subject to valid existing rights. . . .

WATER QUALITY

Clean Water Act §313 [33 USC 1323] Federal Facilities Pollution Control states:

> a. Each department, agency, or instrumentality of the executive, legislative, and judicial branches of the Federal Government (1) having jurisdiction over any property or facility, or (2) engaged in any activity resulting, or which may result, in the discharge or runoff of pollutants, and each officer, agent, or employee thereof in performance of his official duties, shall be subject to, and with, all Federal, State, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of water pollution in the same manner, and to the same extent as any nongovernmental entity including the payment of a reasonable service charge.

Water quality management in New Mexico has both State and Federal aspects. The State, through the NMWQCC and New Mexico Environment Department (NMED), establishes standards for ground water, lakes, and streams or segments of streams, assesses the quality of these water bodies, adopts regulations, and takes actions to protect and maintain water quality. The State also coordinates with the U.S. Environmental Protection Agency in implementing the Federal Water Pollution Control Act (33 U.S.C. 1288), popularly known as the Clean Water Act (CWA) and other Federal acts which contain water quality protection provisions. Following the above provisions of the CWA and State authorities, the NMED and BLM have an MOU dated March 2, 1992, which designates BLM as a water quality management agency on public land and gives BLM the responsiblity for the control and reduction of non-point source pollution on this land.

Executive Order 11752, issued December 17, 1973, requires Federal agencies to comply with applicable State pollution laws.

It is Bureau policy (BLM Manual 7240) to protect, maintain, restore, and/or enhance the quality of water on public land so that its utility for other dependent ecosystems, including present and/or desired human environments, will be maintained equal to or above legal water quality criteria. The water quality limits are those defined by the most stringent applicable laws and regulations. It is also policy to inventory, monitor and evaluate natural and developed water systems to determine existing conditions, make cause/effect determinations or resource activities on water quality, and recommend appropriate actions.

STATE WILDLIFE CONSERVATION ACT

The State of New Mexico State Wildlife Conservation Act in Section 17-2-39 (A) provides that:

> Species of wildlife indigenous to the state that may be found to be threatened or endangered

> should be managed to maintain and, to the extent possible, enhance the numbers within the carrying capacity of the habitat.

Section 17-2-40 sets out the procedures for the Director of the NMDGF to follow in the determination of listing State species and the management measures and requirements necessary for their survival. Further, Section 17-2-40-1 sets the procedures for the Director of the NMDGF to follow in the development of recovery plans for the State-listed species.

The BLM policy (BLM Manual 6840) instructs State Directors to develop policies to assist the State Government in achieving their management objectives of State-listed species. State-listed species, as other special status species, will be considered in all land use plans and environmental assessments and will be given priority for protection through the identification of their habitat as potential Areas of Critical Environmental Concern or other Special Management Areas.

In 1990, a MOU between the NMDGF and the BLM recognized that the NMDGF is the primary agency responsible for management, protection, regulation and propagation of wildlife on public land. It further stipulates and agrees that every provision in the MOU is subject to the laws of the State of New Mexico, the laws of the United States, and to each agency's delegated authority.

Thus, the BLM promotes the State of New Mexico, State Wildlife Conservation Act through policy and an MOU with the NMDGF. The BLM recognizes State-listed species, and they are given priority for protection, the same as Federally-listed species.

EQUITY IMPACT ANALYSIS

The State of New Mexico has vested in County Government the authority to protect the health, safety and welfare of its citizens (NMSA 4-37 (1978):

> ...to provide for the safety, preserve the health, promote the prosperity and improve the morals, order and convenience...enact powers general police power and zoning...County ordinances are effective within the boundaries of the county, including private property owned land and land owned by the United States.

State of New Mexico laws and County ordinances dealing with protection of health, safety and welfare of the citizens apply on Federal public land; however, recent legal action in Federal and State courts resulted in a clear reassertion of the basic principle that Counties and States do not have the authority to overrule or circumvent Federal management of Federal public land. *United States v. Nye County, Nevada, 920 F. Supp. 1108 (D. Nev. 1996); Hat Ranch, Inc., v. Babbitt, 932 F. Supp. 1 (D.D.C. 19950, aff'd, 102 F. 3d 1272 (D.C. Cir. 1996); Boundary Backpackers v. Boundary Country, 128 Idaho 371, 913 P. 2d 1141 (1995).*

Section 1506.2 (c) of NEPA states:

> Agencies shall cooperate with State and local agencies to the fullest extent possible to reduce duplication between NEPA and comparable State and local requirements, unless the agencies are specifically barred from doing so by some other law. Except for cases covered by paragraph (a) of this section, such cooperation shall to the fullest extent possible include joint environmental impact statements. In such cases one or more Federal agencies and one or more State or local agencies shall be joint lead agencies. Where State laws or local ordinances have environmental impact statement requirements in addition to but not in conflict with those in NEPA, Federal agencies shall cooperate in fulfilling these requirements as well as those of Federal laws so that one document will comply with all applicable laws.

The NEPA also mandates that the Federal official is not relieved of responsibilities for the scope, objectivity, and content of the entire statement or any other responsibility regardless of the level of participation by State agencies.

Most of the "Cooperating Agency" Counties in this BLM/State NEPA EIS process have enacted ordinances that require coordinated environmental assessments with Federal agencies, with a special emphasis on socioeconomics, and civil and property rights analyses from government proposed actions. Refer to Cooperating County ordinances entitled, "[name] County Environmental Planning and Review Ordinance." (These ordinances are referred to in NEPA as a "mini-NEPA.") As Cooperating Counties, the County mini-NEPAs are designed to reduce duplication of efforts in the environmental analysis, (NEPA 40 CFR §1506.2) with the counties' authority to assess impacts to civil rights and property rights.

This EIS process took into account as much as possible the ideas from the State and Cooperating Counties. The analysis includes a socioeconomics, and civil and property rights analyses of the proposed actions and alternatives. The BLM, as the responsible Federal agency for the content of the entire statement, edited the County-provided analysis of Human Dimension impacts (including civil rights and property rights). When the Counties did not agree with the edit, they were provided the opportunity have a statement reflecting their prospective (see Appendix F).

CIVIL RIGHTS IMPLICATIONS

There was a concern that implementation of the alternatives would violate the civil rights equal treatment doctrine in two areas. The first being for disproportionate harm to small ranchers compared to large ranchers. The second being the potential for disproportionate harm to public land livestock permittees/lessees compared to other users of the public lands. The BLM assumes the concern focuses on compliance with section one of Amendment XIV of the United States Constitution. The Constitution insures that all citizens have equal treatment and are not discriminated against based on their race, color, sex, religion, natural origin, or age. There is no legal basis to establish ranchers as a protected class. Although ranchers do have the characteristics of race, color, sex, religion, national origin, and age, ranchers are not protected as a class unto themselves. Where BLM takes action will not depend on the permittee/lessee's race, color, sex, religion, national origin, or age. The proposal and alternatives make no reference to taking any action except where the standards are not being met.

The U.S. Supreme Court has established indirect effects on "low-income" individuals is not a basis for strict scrutiny under civil rights standards. Also "low-income" is not a protected class under constitutional civil rights theory.

ENVIRONMENTAL JUSTICE

The BLM will identify lands not meeting the standard due to current grazing practices; then consultation, coordination and cooperation will begin with the livestock grazing permittee/lessee, landowners involved, RAC, the State of New Mexico, and interested public to identify practical means and measures to achieve resource management objectives including grazing guidelines. Emphasis will be given to selection of management practices that will minimize adverse impacts to low income or minority population as directed in Executive Order 12898 on Environmental Justice.

MITIGATION MEASURES

Potential mitigation measures can best be determined when lands have been identified that do not meet the standards. At that time, BLM will determine probable reasons for not meeting the standards. When current livestock grazing practices are determined to be one of the reasons for not meeting the standard, consultation, cooperation and coordination will begin with the livestock grazing permittee/lessee, landowners involved, RAC, the State of New Mexico, and interested public. This process will include discussion of opportunities to mitigate adverse impacts to the various parties. Of particular interest to BLM will be mitigation measures that are feasible.

A full spectrum of possible mitigation was raised in discussions BLM had with the joint lead (State of New Mexico) and cooperators (nine cooperating counties) for the EIS. This full spectrum is discussed here to give the reader an understanding what that range of mitigation is. Some of the listed mitigation measures are feasible while others are not. The feasibility of each is discussed in general terms below. Possible mitigation measures include:

1. Reducing the scope of the project - This would entail changing the project to deal specifically with the area where current conditions and grazing practices are not acceptable instead of a larger area within the allotment or within a pasture. While this approach might be more expensive to implement, it might lessen impact to the permittee/lessee. This approach would be highly feasible; however, it would depend on the specific situation.

2. Delay impacts - This would entail giving the permittee/lessee notice before the actual change is made to the grazing operation so the permittee/lessee has time to plan and make the necessary measures to lessen the impact anticipated. This mitigation is feasible and

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mandated by FLPMA and the grazing regulations for some situations; however, for other situations the mitigation may not feasible.

The grazing regulations provide for such mitigation under specific circumstances.

> 43 CFR §4110.4-2 (b) When public lands are disposed of or devoted to a public purpose which precludes livestock grazing, the permittees and lessees shall be given 2 years' prior notification except in cases of emergency (national defense requirements in time of war, natural disasters, national emergency needs, etc.) before their grazing permit or grazing lease and grazing preference may be canceled. A permittee or lessee may unconditionally wave the 2-year prior notification. Such a waiver shall not prejudice the permittee's or lessee's right to reasonable compensation for, but not to exceed the fair market value of his or her interest in authorized permanent range improvements located on these public lands (see §4120.3-6).

When the BLM is not proposing to cancel the preference or when the proposed action is not excluding livestock use, the 2 year delay is not mandated by regulation, 43 CFR §4180.2 (c) would apply. It states:

> The authorized officer shall take appropriate action as soon as practicable but not later than the start of the next grazing year upon determining that existing grazing management practices or levels of grazing use on public lands are significant factors in failing to achieve the standards and conform with the guidelines that are made effective under this section. Appropriate action means implementing actions pursuant to subparts 4110, 4120, 4130, and 4160 of this part that will result in significant progress toward fulfillment of the standards and significant progress toward conformance with the guidelines. Practices and activities subject to standards and guidelines include the development of grazing-related portions of activity plans, establishment of terms and conditions of permits, leases and other grazing authorizations, and range improvement activities such as vegetation manipulation, fence construction and development of water.

3. Take actions so impacts occur over a period of time - This would entail dealing with making changes to the grazing operation over time to spread out the impact surge to the permittee/lessee. For example, treat one pasture at a time instead of all pastures where brush treatments are called for to help meet the standard for public land health. This approach would be moderately to highly feasible based on the specific situation. If significant progress toward meeting goals and objectives on the allotment is not being made as a whole, the BLM's authorized officer will follow CFR 43 §4180.2 c (see No. 2).

4. Take no action - This would entail not taking any action to improve the public land health by implementing grazing guidelines as a way of lessening impacts to the permittee/lessee. This approach would not be feasible as it conflicts with the grazing regulations (43 CFR 4180.2 c) (see No. 2) which mandate that action will be taken by the next grazing season.

5. Complete a Taking Implications Assessment (TIA) - After determination of site-specific standards for public land health, the BLM must establish the activities that it believes are contributing to the lack of achieving the standard. In consultation with the affected interests, the BLM would then develop a plan to adjust these activities to insure the standard is achieved. For example in grazing, consultation, coordination and cooperation with the permittee/lessee and other affected interests would identify how to adjust livestock grazing practices to be in concert with the rangeland health standards and livestock grazing guidelines.

During the planning process, when private property rights owners believe their rights are being impacted, they could request a TIA. It has been recommended by the Counties that as a mitigating measure, BLM apply the following tests to determine if there is a potential for a taking of private property.

> 1. What property interest will be or are likely to be affected by the proposed action;
> 2. The likely degree of economic impact on identified property and economic interests;
> 3. The character and present use of the property, the anticipated duration of the proposed or intended action, and variations in

> State law;
> 4. Whether the proposed policy or action carries benefits to the private property owner that offset or otherwise mitigate the adverse economic impact of the proposed policy or action; and,
> 5. Whether alternative actions are available that would achieve underlining lawful governmental objectives and would have a lesser economic impact.

This mitigation measure would not be feasible as recommended above by the Counties as their recommendation is a test for regulatory takings. The application of Federal regulations to specific property, or Federal governmental actions physically invading or occupying private property would be the appropriate test. The Attorney General's Guidelines for the Evaluation of Risk and Avoidance of Unanticipated Takings, June 1988 Section V (D) (1) provides the following information for tests of physical intrusion.

Physical intrusion takings analysis is appropriate where the action or policy involves physical presence by the government, or by others pursuant to government authorizations, on private property. Where that presence amounts to occupancy of the property, takings exposure is measured by the physical limits of the occupation. Where the intrusion is less than occupancy, takings exposure turns on both the character of the invasion (for example, overflight, flooding) and a physical presence that is the natural and probable consequence of authorized government action.

The Courts have long held that no taking of private property occurs in the course of lawful administration and regulation of Federal grazing lands because the grazing permit represents a benefit or privilege bestowed by the Federal government upon a private individual and not a compensable property interest under the Fifth Amendment. Thus, an authorized officer's decision to change permitted use (§4110.3), decrease permitted use (§4110.3-2), implement a reduction in permitted use (§4110.3-3) decrease land acreage (§4110.4-2), approve an AMP (§4120.2), or approve a cooperative range improvement agreement (§4120.3-2) does not give rise to a taking claim.

6. Compensate for loss of range improvement values - This would entail the permittee/lessee being paid a reasonable compensation for the adjusted value of the improvements owned by the permittee/lessee, not to exceed fair market value. This approach would seem to be highly feasible as it is provided for now in the law. The FLPMA states in Sec 402 (g):

> Whenever a permit or lease for grazing domestic livestock is canceled in whole or in part, in order to devote the lands covered by the permit or lease to another public purpose, including disposal, the permittee or lessee shall receive from the United States a reasonable compensation for the adjusted value, to be determined by the Secretary concerned, of his interest in authorized permanent improvements placed or constructed by the permittee or lessee on lands covered by such permit or lease, but not to exceed the fair market value of the terminated portion of the permittee's or lessee's interest therein. Except in cases of emergency, no permit or lease shall be canceled under this subsection without two year' prior notification.

7. Compensate for loss of ranch value - This would entail the permittee/lessee being paid the fair market value for loss of ranch value. At this time this approach would not be feasible, as the TGA declares a grazing permit on the Federal range to be a privilege not a right. The Fifth Amendment does not require the government to pay for loss of value added to the permittees/lessees private lands used in combination with the government permit land, and the TGA does not authorize compensation for such added value. The argument that the increment of value added to a private ranch by public land grazing permit is a compensable property interest was considered and rejected by the United States Supreme Court in United States v. Fuller, 409 U.S. 488 (1973). In the Fuller case Justice Rehnquist delivered the opinion of the Court. The opinion states:

> ...These cases go far toward establishing the general principle that the Government as condemnor may not be required to compensate a condemnee for elements of value the the Government has created, or that it might have destroyed under the exercise of governmental authority other than the power of eminent domain.... Seeking as best we may to extrapolate from these prior decisions such a "working rule" we believe that there is a significant difference between the value added to property by a competed public works project, for which the Government must pay,

> and the value added to fee lands by a revocable permit authorizing the use of neighboring lands that the Government owns.... The provisions of the Taylor Grazing Act quoted supra make clear the congressional intent that no compensable property right be created in the permit lands themselves as a result of the issuance of the permit. Given that intent, it would be unusual, we think, for Congress to have turned around and authorized compensation for the value added to fee lands by their potential use in connection with permit lands. We find no such authorization in the applicable congressional enactments....

Even through the Supreme Court issued its decision in the Fuller case in 1973, the issue of compensation for loss of ranch value continues to be the discussed and debated in the courts and elsewhere. Hage v. United States. However the Hage case has only issued a preliminary decision and the Fuller case continues as binding precedent until overturned by the Supreme Court.

When BLM has feasible mitigation measures that are fiscally prudent and reasonably available to BLM and are in concert with BLM Congressionally granted authorities, it will incorporate the mitigation measures into new activity plans and guideline implementation.

CUMULATIVE EFFECTS

The regulations for implementing NEPA require Federal agencies to analyze and disclose cumulative effects that result from incremental impact of an action *"when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." (40 CFR §1508.7)*

The Proposed Action and alternatives are broad in scope. Implementation of the alternatives would consist of many actions, including establishing site-specific standards for land condition that BLM will manage for, inventorying the land, and implementing livestock grazing guidelines to assist in meeting the standards.

The standards and guidelines are general in nature and affect public land statewide. As a result, this EIS is programmatic, addressing environmental consequences that are correspondingly wide in scope. Furthermore, neither the Proposed Action nor the alternatives would be implemented in a vacuum.

The BLM rangeland management policies and public land conditions are not the only factors that affect the public land interests and users, the New Mexico livestock industry, rural communities and individual ranchers. Implementation would be interwoven with many other actions, events, and trends taking place at local levels. Many of the trends that are taking place at the State level are expected to continue. For example, many of the ranches are valued based on long-term profitably characteristics rather than short-term cash flow. However, financing is now based on annual cash flow as required by the Federal Deposit Insurance Corporation. Other important factors in determining cumulative impacts are trends in population, growth, changing demographics, lifestyles, property values, and the personal financial situation. Many rural communities will continue to transform from rural economies to urban economies. Population growth in many rural communities, while contributing to economic growth and diversification, will continue to diminish the relative importance of agriculture in those communities. But, economic diversification also offers more chances to earn off-ranch income and help families maintain their ranches. Communities that continue to lose population and whose economies are in decline may be further strained by decreases in short-term livestock production.

Land use changes such as increased recreation use and subdivision of privately-owned lands, are both a cause and a result of trends in agriculture. Economically marginal ranches might be encouraged to sell to developers where the demand for rural homesites is increasing. As a result, agricultural production would further decline in such areas. Increased outfitter and guide activities, which encourage more recreational use of rural areas and offer more income earning potential to ranches, however these are options on a voluntarily basic rather than enforcement by federal agencies. As these changes are voluntarily adopted, the communities will drift further away from the agricultural base.

Demographic and land use changes might increase or decrease a community's tax base. Where economies are stable or growing, the tax base would likely be stable. Where populations continue to decline or livestock production significantly declines, the tax revenues might continue to decline.

However in the long-term, the counties would benefit as the health of the land improves, and livestock production moves toward preference. Then the economic condition would also improve and the tax base and revenues would increase based on the improved health of the lands.

At the public land level, a number of trends can be expected to continue. Additional use of the public land for recreation is expected. Additionally, it can be projected that, over time, additional management adjustments will be necessary to incorporate the direction of the FLPMA, CWA and the ESA.

Implementation of FLPMA, CWA and ESA is expected to affect the livestock industry, rural communities and the individual ranchers. As these laws are implemented, adjustments in livestock grazing practices may be necessary.

Protection and recovery of Federally-listed species and their habitats are likely to change the way livestock grazing is managed on some Federal land allotments. Future activities designed to avert habitat loss and endangered species listings in the long-term might help sustain livestock production on public land.

Similarly, best management practices for livestock grazing prompted by the need to comply with the CWA are being developed and implemented in New Mexico and may lead to changes in grazing practices.

The future of rangeland vegetation cannot be predicted by considering changes in livestock grazing management alone. Livestock grazing on public land is not the only factor that affects rangeland vegetation. Climate, recreation, and wildlife use, management practices on adjoining land, and the introduction and spread of alien weeds are also key considerations.

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CHAPTER 5

CHAPTER 5
CONSULTATION AND COORDINATION

In September 1995 the statewide RAC was formed to begin work with BLM and the State of New Mexico in the development of Standards for Public Land Health and Guidelines for Livestock Grazing Management in New Mexico. The RAC met numerous times, with all meetings open to the public to develop draft standard and guidelines. Following public comments on the draft standards and guidelines mailed out to over 3000 people in May 1996, the RAC revised the standards and guidelines. This revision is the proposed action in this EIS. Input from a broad spectrum of the public including academicians, ranchers, environmentalists, elected officials, and private citizens made comments during the comment period. This was important in the development of the proposal. Members of the RAC who developed the Proposed Action (RAC Alternative) are listed in the following table.

NEW MEXICO RESOURCE ADVISORY COUNCIL 9-95 THROUGH 8-97

NAME	LOCATION	INTEREST
Nancy Brantley	Carlsbad	3
Celestino Gachupin	Zia Pueblo	3
Sid Goodloe	Capitan	1
Fred Gross Jr.	White Rock	2
Shannon Horst	Albuquerque	2
Pete Aguilar* Kenneth Heil	Santa Fe Farmington	3 3
David Kincaid	Pinon	1
Ruth Musgrave	Albuquerque	3
Frank Nordstrom	Aztec	2
Joseph Quintina	Taos	1
Sanford Schemnitz	Las Cruces	2
Buddy Shaw	Farmington	1
Alexander Thal	Silver City	3
Marvin Lee Watts	Carlsbad	1
Steve West	Carlsbad	2

*Pete Aguilar of Santa Fe was a member of the RAC from September 1995 until August 1996 when his term expired. He was replaced by Kenneth Heil. The Resource Advisory Council consists of 15 members whose representation is balanced equally among the following three general interests:

- 1) grazing, mining, timber, off-highway vehicle and developed recreation interests
- 2) environmental organizations, archaeological and historic, and wild horse and burro interests
- 3) state and local government, Indian tribes, natural science, academicians and the public at large

On January 31, 1996 the NEPA/RMP process was initiated with a Notice of Intent published in the *Federal Register*. This notice requested public comments on the proposal to prepare an environmental document and to modify decisions in all New Mexico BLM RMPs. On May 27, 1996 a Notice of Intent second announced a total of sixteen public meetings across the state to receive comments on the draft standards and guidelines that had been mailed out to over 3,000 people. The Notice of Intent also stated that written comments would be taken and announced that the comment period would close on June 30, 1996. Nearly 300 people signed in as attending the public comment meetings. Public meetings were held in Deming, Lordsburg, Silver City, Las Cruces, Alamogordo, Roswell, Glencoe, Carlsbad, Socorro, Truth or Consequences, Albuquerque, Grants, Gallup, Santa Fe, and Taos, New Mexico; and Antonito, Colorado. Both BLM and RAC members attended the comment meetings to receive comments on the draft standards and guidelines. A total of 276 written comments were received during the comment period.

The RAC had several meetings following the close of the comment period and they revised the draft standards and guidelines in the Proposed Action presented in Chapter 2 of this document.

In September 1996 a BLM Team (list of preparers) was selected, as listed in the following table.

LIST OF BLM PLANNING AND NEPA TEAM MEMBERS		
NAME	**TEAM TITLE**	**OFFICE**
J.W. Whitney	Project Manager	New Mexico State Office
Mark Blakeslee	Asst. Project Manager	New Mexico State Office
Robert Alexander	Techinical Coordinator	New Mexico State Office
Roger Campian	Writer - Livestock	Socorro Field Office
Mike Howard	Writer - Vegetation, T&E Species	Caballo Field Office
Jerry Wall	Writer - Soil, Water, Air	Albuquerque Field Office
Rand French	Writer - Wildlife	Roswell Field Office
Kathy Walter	Writer - Recreation, Special Areas	Rio Puerco Field Office
Jackie Neckels	Writer - Realty, Land Use	Farmington Field Office
Brenda Wilkinson	Writer - Cultural, Historic	Socorro Field Office
Gary Stephens	Writer - Minerals, Geology	New Mexico State Office
Don Boyer	Writer - Editor	Roswell Field Office
Jeanette Pranzo	Reviewer - Economic	Colorado State Office
Roberto Costales	Reviewer - Social	Colorado State Office
Veronica Maldonado	Staff Assistant	New Mexico State Office

LIST OF BLM CONTACTS FOR DATA AND OTHER INFORMATION	
NAME	**OFFICE**
Sam DesGeorges	Taos Field Office
Steve Fischer	Albuquerque Field Office
Lisa Howard	Las Cruces Field Office
Link Lacewell	Carlsbad Field Office
Mark Matthews	Socorro Field Office
Tom Phillips	Las Cruces Field Office
Ray Sanchez	Farmington Field Office
John Spain	Roswell Field Office

The State of New Mexico requested to be a joint lead for this project, resulting in a Memorandum of Understanding between BLM and the state. The state team is listed below:

LIST OF STATE PLANNING AND NEPA TEAM MEMBERS	
NAME	**AREA OF CONTRIBUTION**
Mark Weidler	Team Lead for State
Cecilia Abeyta	Assistant Team Lead For State
John Fowler	Social, Economics, Livestock
G.B. Oliver	Social, Economics
Mike Niveson	Social, Economics, Custom, Culture, Historic
Alan Richardson	Social, Economics
Pat Quintana	Social, Economics, Custom, Culture, Historic
Alex Thal	Social, Economics, Custom, Culture, Historic
David Sanchez	Livestock
Jay Groseclose	Soil, Water, Air
Greg Fitch	Soil, Water, Air, Land Use, Minerals, Geology, Vegetation
John Bokich	Land Use, Wildlife, Minerals, Geology
Chuck Moran	Land Use, Minerals, Geology
Adam Polley	Social, Economics, Custom, Culture, Historic
Allan Vesely	Native American Interest
Ron White	Wildlife, Recreation
Noe Villarreal	Recreation

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In 1997 ten RAC members' terms expired. Of the ten two members were reappointed and eight were appointed as new members. Below is the New Mexico RAC which was announced on August 20, 1997.

These RAC members will suggest any changes to the Proposed Action (RAC Alternative) based on public comments received by BLM during the ninety day comment period on the draft document.

NEW MEXICO RESOURCE ADVISORY COUNCIL APPOINTED 8-97

NAME	LOCATION	INTEREST
Danny Charlie*	Kirtland	3
Nancy Clopton*	Hachita	1
Celestino Gachupin	Zia Pueblo	3
Gregory Green*	Santa Fe	2
Kenneth Heil**	Farmington	3
Phillenore Howard*	Santa Fe	2
Dan Lopez*	Albuquerque	3
Bob Nordstrum*	Albuquerque	2
Joseph Quintina	Taos	1
Ronnie Rardin*	Alamogordo	3
Joe Romero*	Velarde	1
Sanford Schemnitz	Las Cruces	2
Buddy Shaw	Farmington	1
Marvin Lee Watts**	Carlsbad	1
Steve West	Carlsbad	2

*New Appoitments, ** Reappointments

Nine New Mexico Counties requested to be cooperators for this project resulting in a Memorandum Of Understanding with the counties. The cooperating counties are Catron, Chaves, Eddy, Grant, Hidalgo, Lincoln, Luna, Otero, and Sierra. In addition the Navajo Nation requested to be a cooperator for this project. A Memorandum Of Understanding for cooperator status with the Navajo Nation has been prepared but has not been signed to date.

CONSULTATION

Consultation with the USFWS is required prior to initiation of any project by BLM that may affect any federally-listed special status species or its habitat. Consultation is required by Section 7 of the Endangered Species Act of 1973. The required consultation with USFWS begin on October 23, 1996 (see Appendix C-1).

CONSISTENCY WITH OTHER PLANS

At this time there are no known inconsistencies between any of the alternatives and any officially approved and adopted resource-related plans of other federal agencies, state and local governments or Indian tribes. Coordination and consultation will continue throughout the planning process.

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DISTRIBUTION OF THE DRAFT RMPA/DRAFT EIS

Below is a partial listing of various federal, state and local agencies organizations, Indian tribes and individuals to which the draft RMPA/EIS is being sent for review and comment:

Federal Agencies

- Department of Agriculture
  - U.S. Forest Service
  - Natural Resources Conservation Service
- Department of Energy
  - Office of NEPA Oversight
- Department of the Interior
  - Bureau of Indian Affairs
    - Chinle Agency
    - Southern Pueblos Agency
    - Eastern Navajo Agency
  - Bureau of Mines
  - Bureau of Reclamation
  - Office of the Secretary
  - National Park Service
  - Fish and Wildlife Service
- Environmental Protection Agency

State Agencies

Department of Agriculture
Department of Economic Development
Department of Game & Fish
Department of Tourism
Environmental Department
Energy, Minerals & Natural Resources Department
Governor's Office
Interstate Stream Commission
Office of Cultural Affairs
State Land Office

County Offices

County Commissions
Bernalillo
Catron
Chaves
Cibola
Colfax
Curry
DeBaca
Dona Ana
Eddy
Grant
Guadalupe
Harding
Hidalgo
Lea
Lincoln
Los Alamos
Luna
McKinley
Mora
Otero
Quay
Rio Arriba
Roosevelt
Sandoval
San Juan
San Miguel
Santa Fe
Sierra
Socorro
Taos
Torrance
Union
Valencia

City Offices

Alamogordo
Anthony
Artesia
Bayard
Carlsbad
Carrizozo
Central
Clovis
Deming
Eunice
Farmington
Fort Sumner
Gallup
Grants
Hurley
Jal
Lordsburg
Lovington
Magdalena
Mesilla
Reserve
Roswell
Santa Rosa
Silver City
Socorro
Tatum
Tucumcari
Tularosa

Tribal/Pueblo Groups

Acoma Pueblo
Isleta Pueblo
Jicarilla Apache Tribe
Laguna Pueblo
Mescalero Apache Tribe
Navajo Nation
Navajo Tribal Council
Pojoaque Pueblo
San Juan Pueblo
San Felipe Pueblo
San Ildefonso Pueblo
Santa Clara Pueblo
Santa Ana Pueblo
Taos Pueblo
Zia Pueblo
Zuni Pueblo

Other Groups

Albuquerque Production Credit Association
Albuquerque Wildlife Federation
Black Range Resource Conservation & Development, Inc.
Center for Wildlife Law
Coalition of Arizona/New Mexico Counties
Committee of Wilderness Supporters, Inc.
Concerned Citizens del Norte
Continental Divide Trail Society
Deming-Luna County Chamber of Commerce
Dona Ana County Associated Sportsmen, Inc.
El Paso Group of Sierra Club
Forest Guardians
Lighthawk
National Audubon Society
National Wildlife Federation
National Wildlife Federation
Natural Resources Defense Council
New Mexico State University
New Mexico Cattle Growers' Association
New Mexico Farm and Livestock Bureau

New Mexico Public Lands Council, Inc.
New Mexico Natural History Institute
New Mexico Land Use Alliance
New Mexico Wilderness Study Committee
New Mexico Woolgrowers Association
New Mexico Oil and Gas Association
Northern Wilderness Watch
Northern New Mexico Stockman Association
People for the West
Public Lands Action Network
Randal Davey Audubon Center
San Juan Basin Livestock Association
Sangre de Cristo Audubon Society
Santa Fe Group Sierra Club
Sierra Club -Rio Grande Chapter
Southeastern New Mexico Grazing Association
Southern New Mexico Group Sierra Club
Southwest Environmental Center
Southwest Consolidated Sportsmen
Sunland Brittany Club
Sunwest Bank
Texaco Exploration
Tri-State Navajo Extension Service
University of New Mexico Mountaineering Club
Washington Public Land Coordinator
Wilderness Society
Wildlife Management Institute
Wildlife Legislative Council
Yates Petroleum Corp.

Soil and Water Conservation Districts (S&WCD)

Border S&WCD
Caballo S&WCD
Canadian River S&WCD
Carlsbad S&WCD
Carrizozo S&WCD
Central Curry S&WCD
Central Valley S&WCD
Chaves S&WCD
Ciudad S&WCD
Claunch-Pinto S&WCD
Colfax S&WCD
Coronado S&WCD
Cuba S&WCD
DeBaca S&WCD
Deming S&WCD
East Rio Arriba S&WCD
East Torrance S&WCD
Edgewood S&WCD
Grant S&WCD
Guadalupe S&WCD
Hidalgo S&WCD
Hagerman-Dexter S&WCD
La Union S&WCD
Lava S&WCD
Lea S&WCD
McKinley S&WCD
Mesa S&WCD
Mora-Wagon Mound S&WCD
Northeastern S&WCD
Otero S&WCD
Penasco S&WCD
Quemado S&WCD
Roosevelt S&WCD
Salado S&WCD
San Juan S&WCD
San Francisco S&WCD
Santa Fe-Pojoaque S&WCD
Sierra S&WCD
Socorro S&WCD
Southwest Quay S&WCD
Taos S&WCD
Tierra y Montes S&WCD
Upper Chama S&WCD
Upper Hondo S&WCD
Ute Creek S&WCD
Valencia S&WCD
Western Mora S&WCD

Ranch Operators
Those permittees/lessees who signed in at a scoping meeting, sent written comments during the scoping period, or requested to be on the EIS mailing list.

APPENDIX

APPENDIX A

FUNDAMENTALS OF RANGELAND HEALTH AND STANDARDS AND GUIDELINES FOR GRAZING ADMINISTRATION

(43 CFR 4180)

§ 4180.1 Fundamentals of rangeland health.

The authorized officer shall take appropriate action under subparts 4110, 4120, 4130, and 4160 of this part as soon as practicable but not later than the start of the next grazing year upon determining that existing grazing management needs to be modified to ensure that the following conditions exist.

(a) Watersheds are in, or are making significant progress toward, properly functioning physical condition, including their upland, riparian-wetland, and aquatic components; soil and plant conditions support infiltration, soil moisture storage, and the release of water that are in balance with climate and landform and maintain or improve water quality, water quantity, and timing and duration of flow.

(b) Ecological processes, including the hydrologic cycle, nutrient cycle, and energy flow, are maintained, or there is significant progress toward their attainment, in order to support healthy biotic populations and communities.

(c) Water quality complies with State water quality standards and achieves, or is making significant progress toward achieving, established BLM management objectives such as meeting wildlife needs.

(d) Habitats are, or are making significant progress toward being, restored or maintained for Federal threatened and endangered species, Federal Proposed, Category 1 and 2 Federal candidate and other special status species.

§ 4180.2 Standards and guidelines for grazing administration.

(a) The Bureau of Land Management State Director, in consultation with the affected resource advisory councils where they exist, will identify the geographical area for which standards and guidelines are developed. Standards and guidelines will be developed for an entire state, or an area encompassing portions of more than 1 state, unless the Bureau of Land Management State Director, in consultation with the resource advisory councils, determine that the characteristics of and area are unique, and the rangelands within the area could not be adequately protected using standards and guidelines developed on a broader geographical scale.

(b) The Bureau of Land Management State Director, in consultation with affected Bureau of Land Management resource advisory councils, shall develop and amend State or regional standards and guidelines. The Bureau of Land Management State Director will also coordinate with Indian tribes, other State and Federal land management agencies responsible for the management of lands and resources with in the region or area under consideration, and the public in the development of State or regional standards and guidelines. Standards and guidelines developed by the Bureau of Land Management State Director must provide for conformance with the fundamentals of § 4180.1. State or regional standards or guidelines developed by the Bureau of Land Management State Director may not be implemented prior to their approval by the Secretary. Standards and guidelines made effective under paragraph (f) of this section may be modified by the Bureau of Land Management State Director, with approval of the Secretary, to address local ecosystems and management practices.

(c) The authorized officer shall take appropriate action as soon as practicable but not later than the start of the next grazing year upon determining that existing grazing management practices or levels of grazing use on public lands are significant factors in failing to achieve the standards and conform with the guidelines that are made effective under this section. Appropriate actions means implementing actions pursuant to subparts 4110, 4120, 4130, and 4160 of this part that will result in significant progress toward fulfillment of the standards and significant progress toward conformance with the guidelines. Practices and activities subject to standards and guidelines include the development of grazing-related portions of activity plans, establishment of terms and conditions of permits, leases and other grazing authorizations, and range improvement activities such as vegetation manipulation, fence construction and development of water.

(d) At a minimum. State or regional standards developed under paragraphs (a) and (b) of this section must address the following:

(1) Watershed function;

(2) Nutrient cycling and energy flow;

(3) Water quality;

(4) Habitat for endangered, threatened, proposed, Candidate 1 or 2, or special status species; and

(5) Habitat quality for native plant and animal populations and communities.

(e) At a minimum, State or regional guidelines developed under paragraphs (a) and (b) of this section must address the following:

(1) Maintaining or promoting adequate amounts of vegetative ground cover, including standing plant material and litter, to support infiltration, maintain soil moisture storage, and stabilize soils;

(2) Maintaining or promoting subsurface soil conditions that support permeability rates appropriate to climate and soils;

(3) Maintaining, improving or restoring riparian-wetland functions including energy dissipation, sediment capture, groundwater recharge, and stream bank stability;

(4) Maintaining, or promoting stream channel morphology (e.g., gradient, width/depth ratio, channel roughness and sinuosity) and functions appropriate to climate and landform;

(5) Maintaining or promoting the appropriate kinds and amounts of soil organisms, plants and animals to support the hydrologic cycle, nutrient cycle, and energy flow;

(6) Promoting the opportunity for seedling establishment of appropriate plant species when climatic conditions and space allow;

(7) Maintaining, restoring or enhancing water quality to meet management objectives, such as meeting wildlife needs;

(8) Restoring, maintaining or enhancing habitats to assist in the recovery of Federal threatened and endangered species;

(9) Restoring, maintaining or enhancing habitats of Federal Proposed, Category 1 and 2 Federal candidate, and other special status species to promote their conservation;

(10) Maintaining or promoting the physical and biological conditions to sustain native populations and communities;

(11) Emphasizing native species in the support of ecological function; and

(12) Incorporating the use of non-native plant species only in those situations in which native species are not available in sufficient quantities or are incapable of maintaining or achieving properly functioning conditions and biological health;

(f) In the event that State or regional standards and guidelines are not completed and in effect by February 12, 1997, and until such time as State or regional standards and guidelines are developed and in effect, the following standards provided in paragraph (f)(1) of this section and guidelines provided in paragraph (f)(2) of this section shall apply and will be implemented in accordance with paragraph (c) of this section.

(1) Fallback standards.

(i) Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and landform.

(ii) Riparian-wetland areas are in properly functioning condition.

(iii) Stream channel morphology (including but not limited to gradient, width/depth ratio, channel roughness and sinuosity) and functions are appropriate for climate and landform.

(iv) Healthy, productive and diverse populations of native species exist and are maintained.

(2) Fallback guidelines.

(i) Management practices maintain or promote adequate amounts of ground cover to support infiltration, maintain soil moisture storage, and stabilize soils;

(ii) Management practices maintain or promote soil conditions that support permeability rates that are appropriate to climate and soils;

(iii) Management practices maintain or promote sufficient residual vegetation to maintain, improve or restore riparian-wetland functions of energy dissipation, sediment capture, groundwater recharge and stream bank stability.

(iv) Management practices maintain or promote stream channel morphology (e.g., gradient, width/depth ratio, channel roughness and sinuosity) and functions that are appropriate to climate and landform;

(v) Management practices maintain or promote the appropriate kinds and amounts of soil organisms, plants and animals to support the hydrologic cycle, nutrient cycle, and energy flow;

(vi) Management practices maintain or promote the physical and biological conditions necessary to sustain native populations and communities;

(vii) Desired species are being allowed to complete seed dissemination in 1 out of every 3 years (Management actions will promote the opportunity for seedling establishment when climatic conditions and space allow.);

(viii) Conservation of Federal threatened or endangered, Proposed, Category 1 and 2 candidate, and other special status species is promoted by the restoration and maintenance of their habitats;

(ix) Native species are emphasized in the support of ecological function;

(x) Non-native plant species are used only in those situations in which native species are not readily available in sufficient quantities or are incapable of maintaining or achieving properly functioning conditions and biological health;

(xi) Periods of rest from disturbance or livestock use during times of critical plant growth or regrowth are provided when needed to achieve healthy, properly functioning conditions (The timing and duration of use periods shall be determined by the authorized officer.);

(xii) Continuous, season-long livestock use is allowed to occur only when it has been demonstrated to be consistent with achieving healthy, properly functioning ecosystems;

(xiii) Facilities are located away from riparian-wetland areas wherever they conflict with achieving or maintaining riparian-wetland function;

(xiv) The development of springs and seeps or other projects affecting water and associated resources shall be designed to protect the ecological functions and processes of those sites; and

(xv) Grazing on designated ephemeral (annual and perennial) rangeland is allowed to occur only if reliable estimates of production have been made, an identified level of annual growth or residue to remain on site at the end of the grazing season has been established, and adverse effects on perennial species are avoided.

This Table contains a list of decisions from BLM's Resource Management Plans in New Mexico that relate to the County, Proposed and Fallback standards and guidelines in Chapter 2. The table include determinations on what happens to existing decisions in the RMPs if the standards and guidelines are adopted under the various alternatives. Only those decisions which would be modified or replaced are shown. RMPs needing modifications under one or more of the alternatives include: Rio Puerco, Farmington, White Sands, Taos, Carlsbad, and Roswell. RMPs not needing to be modified include Socorro and Mimbres. Most decisions from the RMPs would not be modified or changed as those existing decisions conform with the standards and guidelines. Decisions not modified can be reviewed in each Resource Area or District Office, they remain part of the RMP and are used with the standards and guidelines.

RIO PUERCO RMP

EXISTING RMP DECISION/OBJECTIVE	**How S&Gs Will Affect Decision**		
	County S&G	**RAC S&G**	**Fallback S&G**
ACCESS/TRANSPORTATION/ORV **Decision**: Permitted competitive events such as the "Oh My God 100" will continue to be authorized as not limited to existing roads and trails. p. 81 **Objective**: To provide areas for motor bikes to hold competitive events on a limited basis.	Modify both the decision and objective. They would read: Decision: *Permitted competitive events such as the "Oh My God 100" will be evaluated on a case by case basis and limited to existing roads.* Objective: *To evaluate areas for motor bikes to hold competitive events on a case by case basis.*	Decision and objective would be replaced as shown for the County alternative.	Decision and objective would be replaced as shown for the County alternative.
Decision: Another area has been designated for competitive dune buggy events using existing routes (Map 16). p. 81 **Objective**: To provide a designated area for dune buggy competitive events.	Decision and/or objective would be modified to read: Decision: *Competitive dune buggy events will be evaluated on a case by case basis and limited to existing roads.* Objective: *To evaluate dune buggy competitive events on a case by case basis.*	Decision and/or objective would be modified with the same wording shown for the County alternative.	Decision and/or objective would be modified with the same wording shown for the County alternative.

WHITE SANDS RMP - LAS CRUCES FIELD OFFICE

EXISTING RMP DECISION	How S&Gs Will Affect Decision		
	County S&G	RAC S&G	Fallback S&G
White Sands RMP - 1986 Lands Decision L-3 Land Tenure Adjustment (...New rangeland developments, vegetation treatments, and access will not be proposed in land tenure adjustment areas.)	Decision would be modified by adding the following to the decision: areas), *unless it is determined that the development or treatment is necessary to keep the lands in compliance with the New Mexico Standards for Healthy Range.*	Decision would be modified with the same wording shown for the County alternative.	Decision would be modified with the same wording shown for the County alternative.

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FARMINGTON RMP

EXISTING RMP DECISION	How S&Gs Will Affect Decision		
	County S&G	RAC S&G	Fallback S&G
Issue #6 - Vegetative Uses - Set the correct levels of vegetative use based on a 5 year monitoring plan. Re-examine the Grazing Memorandum of Understanding between the BLM, BIA, and Navajo Nation to expand the agreement for allotments in the exchange zone and cancel the agreement for allotments in the retention and acquisition zones and in allotments wholly or partially within designated wilderness. (pg 2-3)	Decision would be modified by changing the first sentence to read as follows: Set the levels of vegetative use *to achieve resource function commensurate with the Public Land health standards.*	Decision would be modified with the same wording shown for the County S&G alternative.	Decision would be modified with the same wording shown for the County S&G alternative.

TAOS RMP

EXISTING RMP DECISIONS	How S&Gs Will Affect Decision		
	County S&G	RAC S&G	Fallback S&G
Wildlife The objective of the wildlife program is to maintain, improve, and expand wildlife habitat on the public lands for both consumptive and non-consumptive use. This program is also responsible for the protection and recovery of federal and state listed and candidate threatened and endangered plant and animal species. National legislation has directed the BLM to improve wildlife habitat. There are increasing demands on the wildlife resource for both consumptive and non-consumptive uses, as well as increasing competition with other resource uses, such as recreation, grazing, and fuelwood harvesting. Technical publications, studies, reports, and inventory data are used to update the Taos Resource Area with respect to management objectives and techniques.	The first sentence of the Decision would be modified to read: *The objective of the wildlife program is to maintain, improve, and expand wildlife habitat on the public lands for both consumptive and non-consumptive use, balanced with the conservation of cultural/historic opportunities for communities and individuals.* This program is also responsible for.....	Decision would not be modified under this alternative.	Decision would not be modified under this alternative.

EXISTING RMP DECISIONS	How S&Gs Will Affect Decision		
	County S&G	RAC S&G	Fallback S&G
Transportation 1. OR use on all public lands retained in Federal ownership are limited to existing roads and trails. There are two area which have special designations for OR use; Rio Chama is closed to OR use; and Fun Valley is open to OR use with Special Stipulations for Cultural and Paleontological values.	Decision would not be modified under this alternative.	Decision would not be modified under this alternative.	Decision would be modified to read: *OR use on all public lands retained in Federal ownership are limited to existing roads and trails. There are two areas which have special designations for OR use; Rio Chama is closed to OR use; and Fun Valley is open to OR use with Special Stipulations for cultural, Paleontological and vegetative resource values.*
Fun Valley Special Management Area Primary use of the Fun Valley SMA will be off-road vehicle use. Individual OR use and organized race events will be directed to this area. As a result, special consideration will be given to the paleontological and cultural resources in the area. Secondary uses will be grazing and mineral material sales.	Decision would not be modified under this alternative.	The first three sentences of the Decision would be modified to read: *One of the uses in the Fun Valley SMA will be off-road vehicle use. Individual OR use and organized race events will be directed to this area. As a result, special consideration will be given to the paleontological, cultural and vegetative resources in the area.* Secondary uses will be.....	Decision would be modified with the same wording shown for the RAC alternative.

CARLSBAD RMP

EXISTING RMP DECISION	How S&Gs Will Affect Decision		
	County S&G	RAC S&G	Fallback S&G
Vegetation (p. 4 RMP ROD) *Vegetation treatments will be applied to approximately 62,000 acres, or 6% of the total federal acreage, west of the Pecos River. Approximately 95% will be treated with prescribed fire, while the remainder will be treated chemically.	Decision would be replaced with the following wording: *Vegetation treatments may be applied as needed to achieve health rangeland standards.*	Decision would be modified with the same wording shown for the County alternative.	Decision would be modified with the same wording shown for the County alternative.
Livestock Grazing **Livestock management east of the Pecos will be in accordance with East Eddy-Lea MFP grazing decisions (p.1 Carlsbad RMP)** 1.1 Revise 14 existing AMP's to maximize livestock forage on a sustained basis, and to incorporate rest periods to meet the physiological needs of key forage plants.	Decision would be replaced with the following wording: *Revise 14 existing AMPs so that livestock forage is available on a sustained basis, commensurate with public land health standards, and to incorporate rest periods to meet the physiological needs of key forage plants.*	Decision would be modified with the same wording shown for the County alternative.	Decision would be modified with the same wording shown for the County alternative.
1.3 Develop grazing systems on 42 allotments to maximize livestock forage on a sustained basis, and to incorporate rest periods to meet the physiological needs of key forage plants.	Decision would be replaced with the following wording: *Develop grazing systems on 42 allotments so that livestock forage is available on a sustained basis, commensurate with public land health standards, and to incorporate rest periods to meet the physiological needs of key forage plants.*	Decision would be modified with the same wording shown for the County alternative.	Decision would be modified with the same wording shown for the County alternative.

ROSWELL RMP

EXISTING RMP DECISION - Roswell Resource Management Plan	How S&Gs Will Affect Decision		
	County S&G	**RAC S&G**	**Fallback S&G**
Appendix 19. Decisions from Previous Planning Documents 2.) All allotments will be classified as suitable for yearlong grazing unless future activity plans specify a need to change the season of use. (West Roswell MFPA/EIS Record of Decision)	Decision would not be modified under this alternative.	Decision would be modified to read: *All allotments will be classified as suitable for yearlong grazing unless resource conditions reflect a need to change the season of use necessary to meet the standards and guidelines.*	Decision would be modified with the same wording shown for the RAC alternative.
Appendix 19. Decisions from Previous Planning Documents 3.) Develop Allotment Management Plans (AMPs) for allotments where intensive management appears feasible. Grazing schedules incorporated in AMP's should be designed to achieve upward trend and fair or better condition in 6 TO 8 years and maximum sustained carrying capacity in 15 to 20 years. (East Chaves Framework Plan, initially)	Decision would not be modified under this alternative.	Decision would be modified to read: *Develop Allotment Management Plans (AMPs) as consistent with the grazing guidelines, to implement management actions needed to move toward achieving the standards and to respond to requests for plan development by individual permittees/lessees.*	Decision would be modified with the same wording shown for the RAC alternative.
Appendix 19. Decisions from Previous Planning Documents 7.) Documented grazing programs and/or cooperative management plans (CMPs') will be implemented on "I" category allotments. Specific programs and plan will be applied to individual allotments on a priority basis beginning with those allotments with the highest potential for improvement. (West Roswell MFPA/EIS Record of Decision)	Decision would not be modified under this alternative.	Decision would be modified to read: *Documented grazing programs and/or management plans will be implemented on allotments consistent with the grazing guidelines and to respond to requests by permittees/lessee for plan development and implementation.*	Decision would be modified with the same wording shown for the RAC alternative.

EXISTING RMP DECISION - Roswell Resource Management Plan	**How S&Gs Will Affect Decision**		
	County S&G	**RAC S&G**	**Fallback S&G**
Appendix 19. Decisions from Previous Planning Documents **8.) Revise AMP's that have been implemented and are not showing improvement. Revise or develop grazing schedules designed to achieve an improving trend and fair or better condition in 6 to 8 years and maximum sustained carrying capacity in 15 to 20 years.**	**Decision would not be modified under this alternative.**	**Decision would be modified to read: *Revise AMP's that have been implemented and are not consistent with the Standards & Guidelines.***	**Decision would be modified with the same wording shown for the RAC alternative.**
Appendix 19. Decisions from Previous Planning Documents 9.) **The following allotments do not require prescribed grazing management by BLM. Proper grazing use through the efforts of the rancher and the Soil Conservation Service should be encouraged for these allotments.** **"C" CATEGORY ALLOTMENTS 5001, 5002, 5003, 5004, 5006, 5008, 5009, 5011, 5013, 5014, 5015, 5016, 5017, 5022, 5023, 5026, 5027, 5030, 5031, 5033, 5035, 5039 (SHERMAN CATTLE), 5039 (RED TANK CORP.), 5042, 5045, 5052, 5054, 5056, 5059, 5060, 5061, 5064, 5070, 5071, 5081, 5093 (East Chaves Management Framework Plan, initially).**	**Decision would not be modified under this alternative.**	**Decision would be dropped under this alternative.**	**Decision would be dropped under this alternative.**

EXISTING RMP DECISION - Roswell Resource Management Plan	How S&Gs Will Affect Decision		
	County S&G	RAC S&G	Fallback S&G
Appendix 19. Decisions from Previous Planning Documents 12.) Implementation of rangeland improvement projects will be in accordance with the Final Rangeland Improvement Policy (Washington Office Instruction Memorandum 83-27). In allocating rangeland improvement funds, BLM procedures for evaluating, ranking, and budgeting range improvements will be applied. Appropriated funds available for investment in rangeland improvements will be allocated as follows: a. First, to the maintenance of improvements that continue to serve a valid purpose or objective and for which the BLM has maintenance responsibility. b. Second, for the design, construction and maintenance of new rangeland improvements that conform with a specific development plan for the area. Such plans may be Cooperative Management Plans (CMPs) - now Allotment Management Plans (AMPs), Habitat Management Plans (HMPs), Herd Management Plans (HMAPs) or other plans providing a rational decision-making framework for meeting multiple-use management objectives. c. Additional range improvements will be evaluated and implemented when the need is identified. (West Roswell MFPA/EIS Record of Decision)	Decision would be modified to read: *Implementation of rangeland improvement projects and treatments will be consistent with current laws, regulations, policies, land use plans and budgetary priorities. Rangeland improvements and treatments will be designed and implemented in a manner that is consistent and will promote rangeland health and achieve the standards and guidelines.*	Decision would be modified with the same wording shown for the County alternative.	Decision would be modified with the same wording shown for the County alternative.

EXISTING RMP DECISION - Roswell Resource Management Plan	**How S&Gs Will Affect Decision**		
	County S&G	**RAC S&G**	**Fallback S&G**
Appendix 19. Decisions from Previous Planning Documents **15.) Provisions should be made for planning revegetation of land to a level which is suitable for livestock production on land simultaneous with or upon abandonment of a site. Mining areas, oil and gas roads and pads, mineral sites should be protected either through stipulations or by Bureau action prior to disturbance. (East Chaves Management Framework Plan)**	**Decision would not be modified under this alternative.**	**Decision would be modified to read:** ***Provisions will be made for the planning of revegetation of the land to a level which is suitable to promote diversity and ground cover on land simultaneous with or upon abandonment of a site. Mining areas, oil and gas roads and pads, mineral sites will be protected either through stipulations or by Bureau action prior to disturbance.***	**Decision would be modified with the same wording shown for the RAC alternative.**

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EXISTING RMP DECISION - Roswell Resource Management Plan	How S&Gs Will Affect Decision		
	County S&G	RAC S&G	Fallback S&G
Chapter 2 PRMP/EIS, pg. 2-42 - 43 LIVESTOCK GRAZING MANAGEMENT			
Goal: Provide effective and efficient management of allotments to maintain, improve, and monitor range conditions.	Goal would not be modified under this alternative.	Goal would not be modified under this alternative.	Goal would not be modified under this alternative.
Allotment categorization and initial grazing use allocations made in the East Roswell Grazing Environmental Impact Statement (1979) and the Roswell Resource Area Management Framework Plan Amendment/Environmental Impact Statement (1984) would be used as the basis for continued livestock grazing. Changes in use allocations would continue to be made on the basis of monitoring data. Livestock grazing management decisions from previous land use plans, and the disposition of those decisions, are discussed in Appendix 19.	Proposed wording in the PRMP/EIS would not be modified under this alternative.	Proposed wording in the PRMP/EIS would be modified under this alternative to read: *Livestock grazing management decisions made in the East Roswell Grazing Environmental Impact Statement (1979) and the Roswell Resource Area Management Framework Plan Amendment/Environmental Impact Statement (1984) would be used as the basis for continued livestock grazing. Changes in use allocations would continue to be made on the basis of monitoring data. These decisions are discussed in Appendix 19.*	Proposed wording in the PRMP/EIS would be modified with the same wording shown for the RAC alternative.
Within the Macho WHA, new internal pasture fences constructed of netwire would not be allowed across public lands on allotments that currently support pronghorn or on allotments in the WHA with the potential to provide suitable pronghorn habitat. Future changes in class of livestock would necessitate reconsidering the fencing standard to be used in each situation. Exceptions to this requirement are: - The grazing permittee agrees to the construction of pronghorn passes on proposed interior fences; - The grazing pemitee agrees to allow the BLM to modify fences; - Netwire would be used in the construction of small traps or holding pens; - Netwire would be used in security fences around facilities such as microwave sites.	Proposed wording in the PRMP/EIS would be modified under this alternative to read: *Within portions of the Macho WHA meeting the antelope suitability criteria, new internal pasture fences constructed of netwire would not be allowed accross public lands on allotments that currently support pronghorn or on allotments in the WHA with the potential to provide suitable pronghorn habitat. Exceptions to this requirement are:* *- The grazing permittee agrees to the construction of pronghron passes on proposed interior fences;* *- The grazing pemitee agrees to allow the BLM to modify fences;*	Proposed wording in the PRMP/EIS would be modified under this alternative with the same wording shown for the County alternative.	Proposed wording in the PRMP/EIS would be modified under this alternative with the same wording shown for the County alternative.

EXISTING RMP DECISION - Roswell Resource Management Plan	**How S&Gs Will Affect Decision**		
	County S&G	**RAC S&G**	**Fallback S&G**
	- The grazing permittee agrees to allow the BLM to modify fences; - Netwire would be used in the construction of small traps or holding pens; *- Netwire would be used in security fences around facilities such as microwave sites.* *Future changes in class of livestock would necessitate reconsidering the fencing standard to be used in each situation.*		
Chapter 2 PRMP/EIS, pg. 2-69 Special Status Species Habitat Management Goal: Provide protection and recovery for all federal and state listed species. Manage occupied and potential habitat for federal and state-listed species on public land to maintain or enhance populations. Manage habitat for federal candidate species to avoid degrading habitat and further listing by either state or federal governments while allowing for mineral production and development, livestock grazing and other uses. Refer to Appendix 17 for listing of Special Status Species occurring or potentially occurring in the Roswell Resource Area.	*Goal statement would not be modified under this alternative.* *The following wording would be added as a paragraph following the paragraph after the goal statement. It would read: Affected permittees/lessees will be offered the opportunity to participate in the development of recovery plans and to participate in Section 7 consultations.*	*Goal statement would not be modified under this alternative.* *Wording would not be modified under this alternative.*	*Goal statement would not be modified under this alternative.* *Wording would not be modified under this alternative.*

This Table contains a few decisions from BLM's Resource Management Plans in New Mexico not needing to be amended but related to the Proposed, County and Fallback standards and guidelines in chapter 2 possibly needing maintenance. The tables shows how RMP decisions could be maintained as provided for in 1610.5-4 of the planning regulations. The decisions would not need to be amended but could be maintained to include language based on the approval of standards and guidelines to be included with all existing decisions. Maintenance is used to clarify a decision without actually changing the decision. The decisions listed here is only a sampling of decisions that could be maintained for this action once the planning is completed. Decisions shown for maintenance include a sample from Rio Puerco, Farmington, White Sands, and Carlsbad RMPs. Decisions from Socorro, Taos, Roswell and Mimbres RMPs could also be maintained as provided for in 1610.5-4 for the planning regulations but no samples of their decisions were included here. Existing RMP decisions can be reviewed at the FOs where the RMP was prepared. It is not known how many decisions from the RMPs would have maintenance done on them following a decision of the standards and guidelines to be used in New Mexico. The standards and guidelines approved would be used in conjunction with existing RMP decisions as well as those amended through this RMPA/EIS process.

RIO PUERCO RMP

EXISTING RMP DECISION/OBJECTIVE	.... **How S&Gs Will Affect Decision**		
	County S&G	**Proposed S&G**	**Fallback S&G**
Decision: Specific management prescriptions to resolve the identified resource conflicts will continue to be developed in Allotment Management Plans (AMPs). They will be prepared in consultation, cooperation and coordination with affected permittees and/or affected parties (PRIA Section 8). p. 46 **Objective**: To ensure that all resource needs are considered and how livestock grazing will be conducted.	Decision and/or objective could be maintained by adding: *commensurate with Public Land health standards and guidelines.*	Decision and/or objective could be maintained with the same wording shown for the County alternative.	Decision and/or objective could be maintained with the same wording shown for the County alternative.
Decision: Future rangeland improvements will be designed and constructed to meet the management objectives in the RMP. The extent, location and timing would depend on improvements needed for each allotment, allottee contributions, BLM funding, and other resource uses. All improvements will be subjected to economic analysis. This analysis will determine priority ranking. p. 49-51 **Objective**: Range improvement funds will be used in the highest priority allotments.	Decision and/or objective could be maintained by adding: *commensurate with Public Land health standards and guidelines.*	Decision and/or objective could be maintained with the same wording shown for the County alternative.	Decision and/or objective could be maintained with the same wording shown for the County alternative.

Decision: Animal damage control activities on public lands will be guided by Department of the Interior (DOI) policy. p. 54 **Objective**: Implement the current BLM-USDA animal damage control master memorandum of understanding.	Decision and/or objective could be maintained by adding: *commensurate with Public Land health standards and guidelines.*	Decision and/or objective could be maintained with the same wording shown for the County alternative.	Decision and/or objective could be maintained with the same wording shown for the County alternative.
Decision: Develop a comprehensive watershed plans by 1990 for the Governor, Trechado, Monte Seco, and San Jose watersheds as specified in the Divide MFP. p. 41 **Objective**: To reduce erosion and improve water quality. 1 - Commensurate with Public Land health standards and guidelines.	Decision and/or objective could be maintained by adding: *commensurate with Public Land health standards and guidelines.*	Decision and/or objective could be maintained with the same wording shown for the County alternative.	Decision and/or objective could be maintained with the same wording shown for the County alternative.
Decision: Public lands will be designated as "open", "limited", or "closed" for ORV use. p. 56 **Objective**: To determine which areas are best suited for ORV use in the RPRA based on environmental factors such as soil and vegetation.	Decision and/or objective could be maintained by adding: *commensurate with Public Land health standards and guidelines.*	Decision and/or objective could be maintained with the same wording shown for the County alternative.	Decision and/or objective could be maintained with the same wording shown for the County alternative.
Decision: The RPRA will prepare a Transportation Management Plan during FY 87. p. 115 **Objective**: A comprehensive road inventory is needed to identify type, maintenance needs, and if we plan to abandon road or upgrade it.	Decision and/or objective could be maintained by adding: *commensurate with Public Land health standards and guidelines.*	Decision and/or objective could be maintained with the same wording shown for the County alternative.	Decision and/or objective could be maintained with the same wording shown for the County alternative.

WHITE SANDS RMP

EXISTING RMP DECISION	HOW S&Gs WILL AFFECT DECISION		
	County S&G	Proposed S&G	Fallback S&G
Southern Rio Grande Grazing EIS - 1982 Rangeland Management - From Southern Rio Grande EIS Objective: To concentrate management and rangeland improvement efforts on those allotments that have a good potential for improvement and resolution of conflicts.	Objective would not need to be maintained under this alternative.	Objective could be maintained by adding the following at the end of the objective: conflict, ***striving for healthy, productive and diverse populations of native species as defined by the NRCS Range Site Descriptions and consistent with a multiple use concept.***	Objective could be maintained by adding the following at the end of the objective: conflict, ***striving for healthy, productive and diverse populations of native species as defined by the NRCS Range Site Descriptions and consistent with a multiple use concept.***

EXISTING RMP DECISION	HOW S&Gs WILL AFFECT DECISION		
	County S&G	Proposed S&G	Fallback S&G
White Sands RMP - 1986 Rangeland Management - WSRA (Except McGregor Range) Objectives: 1. A threatened, endangered, State-listed, or sensitive species clearance will be conducted by BLM prior to the beginning of any project. If a "may affect" determination is made, consultation will be undertaken with the agency (Fish and Wildlife Service, New Mexico Department of Game and Fish, or the New Mexico State Heritage Program) listing the species which may be affected. The results of the consultation will determine the course of action necessary to avoid adverse effects on listed species (Endangered Species Act and BLM Manual 6840).	Objective could be maintained by adding after the end if the second sentence following...the species which may be affected. ***In addition, consultation with the affected permittee will take place pursuant to New Mexico's Wildlife Conservation Act.***	Objective would not need to be maintained under this alternative.	Objective would not need to be maintained under this alternative.
2. Rangeland improvements will be designed to provide for wildlife needs. Livestock water developments will be designed to permit use and escape by wildlife species. Where BLM controls the water source, water will be available yearlong.	Objective would not need to be maintained under this alternative.	Objective 2 could be maintained by adding after the end of the third sentence the following...water will be available yearlong. ***Facilities will be located away from riparian-wetlands, where possible and desirable to be consistent with multiple use objectives.***	Objective 2 could be maintained by adding after the end of the third sentence the following...water will be available yearlong. ***Facilities will be located away from riparian-wetlands, where possible and desirable to be consistent with multiple use objectives.***
Decisions: RM-3 Rangeland Monitoring Program	Decision would not need to be maintained under this alternative.	Decision could be maintained by adding...***to properly manage the renewable resources of the Resource Area, striving for healthy, productive and diverse populations of native species as defined by NRCS Range Site Descriptions and consistent with the multiple use concept.***	Decision could be maintained by adding...***to properly manage the renewable resources of the Resource Area, striving for healthy, productive and diverse populations of native species as defined by NRCS Range Site Descriptions and consistent with the multiple use concept.***

EXISTING RMP DECISION	HOW S&Gs WILL AFFECT DECISION		
	County S&G	Proposed S&G	Fallback S&G
RM-5 Through land treatment projects (chemical, mechanical, and burning) on 241,576 acres, forage production will increase by 20,006 AUMs in the long-term. Seeding is planned for 1,597 acres.	Decision would not need to be maintained under this alternative.	Decision could be maintained by adding the following sentence. ***Seeding, using native species where possible and desirable is planned.***	Decision could be maintained by adding the following sentence. ***Seeding, using native species where possible and desirable is planned.***
RM-6 It is estimated that the following rangeland developments will be constructed in the short-term: 142.9 miles of pipeline, 124.25 miles of fence, 34 wells with pumps or windmills, 36 storage tanks (20,000 gallons each), 148 drinking troughs, 16 dirt tanks, 74 erosion control dikes, and 1 catchment.	Decision would not need to be maintained under this alternative.	Decision could be maintained by adding the following sentence. ***Facilities will be located away from riparian-wetlands, where possible and desirable to be consistent with multiple use objectives.***	Decision could be maintained by adding the following sentence. ***Facilities will be located away from riparian-wetlands, where possible and desirable to be consistent with multiple use objectives.***
White Sands RMP Rangeland Management - McGregor Range Mc/G-7 19 wells, 77 water troughs, 39 water storage tanks, and 5 dirt tanks will be constructed.	Decision would not need to be maintained under this alternative.	Decision could be maintained by adding the following sentence. ***Facilities will be located away from riparian-wetlands, where possible and desirable to be consistent with multiple use objectives.***	Decision could be maintained by adding the following sentence. ***Facilities will be located away from riparian-wetlands, where possible and desirable to be consistent with multiple use objectives.***

EXISTING RMP DECISION	HOW S&Gs WILL AFFECT DECISION		
	County S&G	Proposed S&G	Fallback S&G
White Sands RMP - 1986 Soils and Water Resources Objectives: 2. The policy given in Manual 6740-Wetland-Riparian Area Protection and Management will provide the basis for management of all riparian areas.	Objective would not need to be maintained under this alternative.	Objective could be maintained by adding the following: ***The objective is for Riparian-Wetland areas to be in properly functioning condition as defined by NRCS wetland criteria.***	Objective could be maintained by adding the following: ***The objective is for Riparian-Wetland areas to be in properly functioning condition as defined by NRCS wetland criteria.***

EXISTING RMP DECISION	HOW S&Gs WILL AFFECT DECISION		
	County S&G	Proposed S&G	Fallback S&G
White Sands RMP Amendment for McGregor Range - 1990 Livestock Grazing Objective: The Objectives of the grazing management program on McGregor Range are to maintain the present rangeland condition which is the desired plant community and maintain the trend on acres having good to excellent ecological condition and stable to improving trend, and stabilize or improve the trend in other areas; and increase the forage production from 49,877 animal unit months (AUMs) to 60,000 AUMs for utilization by cattle, deer, and pronghorn antelope.	Objective would not need to be maintained under this alternative.	Objective could be maintained by adding the following to the middle of the objective ...improve the trend in other areas ***with native species as the primary component of the desired plant community***, and increase the forage production...	Objective could be maintained by adding the following to the middle of the objective ...improve the trend in other areas ***with native species as the primary component of the desired plant community***, and increase the forage production...
MG-7 19 wells, 77 water troughs, 39 water storage tanks, and 5 dirt tanks will be constructed.	Decision would not need to be maintained under this alternative.	Decision could be maintained by adding the following: ***Facilities will be located away from riparian-wetland areas, where possible and desirable to be consistent with multiple use objectives.***	Decision could be maintained by adding the following: ***Facilities will be located away from riparian-wetland areas, where possible and desirable to be consistent with multiple use objectives.***
MG-8 3 corrals will be constructed.	Decision would not need to be maintained under this alternative.	Decision could be maintained by adding the following: ***Facilities will be located away from riparian-wetland areas, where possible and desirable to consistent with multiple use objectives.***	Decision could be maintained by adding the following: ***Facilities will be located away from riparian-wetland areas, where possible and desirable to be consistent with multiple use objectives.***

EXISTING RMP DECISION	HOW S&Gs WILL AFFECT DECISION		
	County S&G	Proposed S&G	Fallback S&G
Wildlife Objectives: 3. The NMDGF, the New Mexico State Forestry Resource Conservation Division, and the USFWS will be consulted prior to implementing projects that may affect listed species or their habitat. Management activities in habitat for threatened, endangered, or sensitive species will be designed to benefit those species, or at least minimize any potential adverse influence of the activity on the species.	Objective would not need to be maintained under this alternative.	Decision could be maintained by adding the following: ...activity on the species, *and to be consistent with multiple use concepts and other Statutory requirements.*	Decision could be maintained by adding the following: ...activity on the species, *and to be consistent with multiple use concepts and other Statutory requirements.*

FARMINGTON RMP

EXISTING RMP DECISION	HOW S&Gs WILL AFFECT DECISION		
	County S&G	Proposed RAC S&G	Fallback S&G
Issue #1 - Land Ownership Adjustments - Actively pursue consolidated land ownership patterns by acquiring non-BLM lands in acquisition zones including special management areas, exchanging public lands out of BLM administration in the exchange zone, and disposing of land parcels specifically listed in the RMP. (pg 2-3)	Decision could be maintained by changing the decision as follows: Actively pursue consolidated land ownership patterns *capable of attaining resource functions commensurate with Public Land health standards* by acquiring non-BLM lands in acquisition zones including special management areas, exchanging public lands out of BLM administration in the exchange zone, and disposing of land parcels specifically listed in the RMP.	Decision could be maintained with the same wording shown for the county S&G alternative.	Decision could be maintained with the same wording shown for the county S&G alternative.
Issue #2 - Home Use Fuel Sources - Allow greenwood cutting in order to salvage trees scheduled for clearing in areas proposed for surface mining and land improvement projects. Allow collection of dead and down fuelwood Resource Area wide except in Special Management Areas prohibiting this activity. Examine domestic use license applications on a case-by-case basis. (pg 2-3)	Decision could be maintained by changing the first sentence to read as follows: Allow greenwood cutting in order to salvage trees scheduled for clearing in areas proposed for surface mining and *as* land improvement projects *to enhance resource functions commensurate with Public Land health standards.*	Decision could be maintained with the same wording shown for the county S&G alternative.	Decision could be maintained with the same wording shown for the county S&G alternative.

EXISTING RMP DECISION	HOW S&Gs WILL AFFECT DECISION		
	County S&G	Proposed RAC S&G	Fallback S&G
Issue #3 - Special Management Areas - Strive to achieve the land allocation management goal stated for each SMA and *resource function commensurate with Public Land health standards in (*1)* the management objectives identified in future activity plans. Implement the management prescriptions for each SMA. Assess future proposals for SMA designation based on existing representation in the SMA spectrum and the need for intensive management attention above that afforded by normal operations. Complete ACEC implementation plans by FY 90. (pg 2-3)	Decision could be maintained by changing the first sentence to read as follows: Strive to achieve the land allocation management goal stated for each SMA and *resource function commensurate with Public Land health standards in* the management objectives identified in future activity plans.	Decision could be maintained with the same wording shown for the county S&G alternative.	Decision could be maintained with the same wording shown for the county S&G alternative.
Guidance: Minerals - The objective of the minerals program is to provide for the public use of leasable, locatable, and saleable minerals consistent with the laws that govern these activities and to minimize environmental damage. (pg 2-8)	Decision could be maintained by changing it to read as follows: The objective of the minerals program is to provide for the public use of leasable, locatable, and saleable minerals consistent with the laws that govern these activities and to minimize environmental damage *to preserve natural functions commensurate with Public Land health standard.*	Decision could be maintained with the same wording shown for the county S&G alternative.	Decision could be maintained with the same wording shown for the county S&G alternative.
Issue #5 - Transportation - Complete ORV designation implementation plans according to BLM manual 8341 by FY 90 and begin monitoring. Acquire easements as needed. (pg 2-3)	Decision could be maintained by changing the first sentence to read as follows: Complete ORV designation implementation plans according to BLM manual 8341 by FY 90 and begin monitoring *to preserve natural functions within acceptable limits of Public Land health standard.*	Decision could be maintained with the same wording shown for the county S&G alternative.	Decision could be maintained with the same wording shown for the county S&G alternative.

EXISTING RMP DECISION	HOW S&Gs WILL AFFECT DECISION		
	County S&G	Proposed RAC S&G	Fallback S&G
Issue #7 - Rights-of-Way Corridors and Windows- Examine applications for Right-of-Way Corridors on a case-by-case basis. (pg 2-3)	Decision could be maintained by changing it to read as follows: Examine applications for Right-of-Way Corridors on a case-by-case basis, *preserve resource function commensurate with Public Land health standard.*	Decision could be maintained with the same wording shown for the county S&G alternative.	Decision could be maintained with the same wording shown for the county S&G alternative.

APPENDIX C-1
LETTER ON SECTION 7 CONSULTATION TO USF&WS

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
New Mexico State Office
1474 Rodeo Road
P. O. Box 27115
Santa Fe, New Mexico 87502-011

IN REPLY REFER TO:
(931) 1610/6840 OCT 23 1996

Ms. Jennifer Fowler-Propst
Field Supervisor
Ecological Services State Office
U.S. Fish and Wildlife Service
2105 Osuna NE,
Albuquerque, NM 87113

Dear Ms. Fowler-Propst,

The Bureau of Land Management, New Mexico State Office (BLM, NMSO) is beginning the preparation of an Environmental Impact Statement (EIS) concerning the implementation of the new grazing regulations, resulting from the 1994 Rangeland Reform effort. We will specifically be selecting a set of standards, for public land health and guidelines for livestock grazing, from a range of alternatives that would guide management on BLM managed public lands in New Mexico. In the process, each of the eight (8) Resource Management Plans (one in each Resource Area, and the Farmington District) would be amended to incorporate these standards.

An initial draft of the EIS (Chapter 1, Purpose and Need) is attached to provide more information regarding the EIS. A team composed of BLM specialists from various offices has been assembled to prepare this document. J.W. Whitney, in the BLM, NMSO is the team leader. Mike Howard, in the Las Cruces District, has been assigned responsibility to complete the Vegetation and Special Status Species Sections, and the Biological Assessment. In addition, it is possible that a group of individuals representing the State of New Mexico will assist in development of the EIS. The EIS is scheduled to be completed in early August 1997. Preparation is on an extremely tight time frame.

At this time we would like to initiate Informal Section 7 Consultation and request an official list of listed, proposed and category 1 species to be considered in this effort. We would appreciate having separate lists of species on public lands for each county of New Mexico.

If you have any questions regarding the project, please contact Mike Howard at (505) 525-4248, or J.W. Whitney at 505 438-7438.

Sincerely.

s/ Bill Overbaugh for

Richard A. Whitley
Deputy State Director
Resource, Planning,
Use and Protection

1 Enclosure:
Draft EIS Chapter 1 (6 pp)

cc:
NM (03000, Mike Howard)
NM (93100, J.W. Whitney)

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APPENDIX C-2
LETTER ON SECTION 7 CONSULTATION FROM USF&WS

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New Mexico Ecological Services Field Office
2105 Osuna NE
Albuquerque, New Mexico 87113
Phone: (505) 761-4525 Fax: (505) 761-4542

November 8, 1996

Cons. #2-22-97-I-049

Memorandum

To: Deputy State Director, Bureau of Land Management, Santa Fe, New Mexico

From: Field Supervisor, New Mexico Ecological Services Field Office, U.S. Fish and Wildlife Service, Albuquerque, New Mexico

Subject: Request for Species List

This responds to your October 23, 1996, memorandum requesting a list of species federally listed or proposed to be listed as endangered or threatened. The proposed project is preparation of an Environmental Impact Statement concerning the implementation of new grazing regulations resulting from the 1994 Rangeland Reform effort. As requested, a list of endangered, threatened, and candidate species, and species of concern for each county in New Mexico is attached. Under the Endangered Species Act, it is the responsibility of the Federal action agency or its designated representative to determine whether the proposed action "may affect" any listed or proposed species.

Candidates are those species for which the U.S. Fish and Wildlife Service (Service) has sufficient information on their biological status and threats to propose them as endangered or threatened, but for which issuance of a proposed rule is precluded by work on higher priority species. Species of concern include those for which further biological research and field study are needed to resolve their conservation status. Candidate species and species of concern have no legal protection under the Endangered Species Act and are included in this document for planning purposes only. However, the Service is concerned and would appreciate receiving any status information that is available or gathered on these species.

We suggest you contact the New Mexico Department of Game and Fish and the New Mexico Energy, Minerals, and Natural Resources Department, Forestry and Resources Conservation Division for information concerning fish, wildlife, and plants of State concern.

If we can be of further assistance, please contact Sonja Jahrsdoerfer at (505) 761-4525.

s/Jennifer Fowler-Propst

Attachment

cc: (wo/attch)
Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico
Director, New Mexico Energy, Minerals, and Natural Resources Department, Forestry and Resources Conservation Division, Santa Fe, New Mexico

July 8, 1996

NEW MEXICO COUNTY LIST
ENDANGERED, THREATENED, AND CANDIDATE SPECIES AND SPECIES OF CONCERN

Bernalillo

Arizona black-tailed prairie dog, Cynomys ludovicianus arizonensis, SC
Big free-tailed bat, Nyctinomops macrotis (= Tadarida m., T. molossa), SC
Black-footed ferret, Mustela nigripes, E
Fringed myotis, Myotis thysanodes, SC
Long-legged myotis, Myotis volans, SC
New Mexican meadow jumping mouse, Zapus hudsonius luteus, SC
Occult little brown bat, Myotis lucifugus occultus, SC
Pale Townsend's (=western) big-eared bat, Plecotus townsendii pallescens, SC
Pecos River muskrat, Ondatra zibethicus ripensis, SC
Small-footed myotis, Myotis ciliolabrum, SC
Spotted bat, Euderma maculatum, SC
Yuma myotis, Myotis yumanensis, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Black tern, Chlidonias niger, SC
Ferruginous hawk, Buteo regalis, SC
Loggerhead shrike, Lanius ludovicianus, SC
Mexican spotted owl, Strix occidentalis lucida, T w/CH
Mountain plover, Charadrius montanus, C
Northern goshawk, Accipiter gentilis, SC
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
Western burrowing owl, Athene cunicularia hypugea, SC
White-faced ibis, Plegadis chihi, SC
Whooping crane, Grus americana, E
Flathead chub, Platygobio (= Hybopsis) gracilis, SC
Rio Grande silvery minnow, Hybognathus amarus, E w/PCH
Texas horned lizard, Phrynosoma cornutum, SC
Millipede, Toltecus chihuanus, SC

Catron

Allen's (Mexican) big-eared bat, Idionycteris (= Plecotus) phyllotis, SC
Big free-tailed bat, Nyctinomops macrotis (= Tadarida m., T. molossa), SC
Black-footed ferret, Mustela nigripes, E
Cave myotis, Myotis velifer, SC
Greater western mastiff bat, Eumops perotis californicus, SC
Fringed myotis, Myotis thysanodes, SC
Long-eared myotis, Myotis evotis, SC
Long-legged myotis, Myotis volans, SC
Occult little brown bat, Myotis lucifugus occultus, SC
Pale Townsend's (= western) big-eared bat, Plecotus townsendii pallescens, SC
Southwestern Otter, Lutra canadensis sonorae, SC
Small-footed myotis, Myotis ciliolabrum, SC
Spotted bat, Euderma maculatum, SC
Yuma myotis, Myotis yumanensis, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Brown pelican, Pelecanus occidentalis, E
Ferruginous hawk, Buteo regalis, SC
Interior least tern, Sterna antillarum, E
Loggerhead shrike, Lanius ludovicianus, SC
Mexican spotted owl, Strix occidentalis lucida, T w/CH
Mountain plover, Charadrius montanus, C
Northern goshawk, Accipiter gentilis, SC
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
Western burrowing owl, Athene cunicularia hypugea, SC
Chihuahua catfish, Ictalurus sp.*, SC
Desert sucker, Catostomus clarki, SC
Gila chub, Gila intermedia, SC
Gila trout, Oncorhynchus gilae, E
Loach minnow, Rhinichthys cobitis, T
Longfin dace, Agosia chrysogaster, SC
Roundtail chub, Gila robusta, SC
Sonora sucker, Catostomus insignis, SC
Speckled dace, Rhinichthys osculus (Gila drainage), SC
Spikedace, Meda fulgida, T
Arizona southwestern toad, Bufo microscaphus microscaphus, SC
Chiricahua leopard frog, Rana chiricahuensis, SC
Lowland leopard frog, Rana yavapaiensis, SC
Mexican garter snake, Thamnophis eques, SC
Narrowhead garter snake, Thamnophis rufipunctatus, SC
Blumer dock, Rumex orthoneurus, C

Catron, continued

Gila groundsel, Senecio quaerens, SC
Goodding's onion, Allium gooddingii, C
Hess' fleabane, Erigeron hessii, SC
Mogollon clover, Trifolium longipes var. neurophyllum, SC
Santa Fe cholla, Opuntia viridiflora, SC
Zuni (= rhizome) fleabane, Erigeron rhizomatus, T

Chaves

Arizona black-tailed prairie dog, Cynomys ludovicianus arizonensis, SC
Black-footed ferret, Mustela nigripes, E
Cave myotis, Myotis velifer, SC
Desert pocket gopher, Geomys bursarius arenarius, SC
Fringed myotis, Myotis thysanodes, SC
Long-eared myotis, Myotis evotis, SC
Long-legged myotis, Myotis volans, SC
Occult little brown bat, Myotis lucifugus occultus, SC
Pale Townsend's (= western) big-eared bat, Plecotus townsendii pallescens, SC
Pecos River muskrat, Ondatra zibethicus ripensis, SC
Small-footed myotis, Myotis ciliolabrum, SC
Swift fox, Vulpes velox, C
Yuma myotis, Myotis yumanensis, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Black tern, Chlidonias niger, SC
Brown pelican, Pelecanus occidentalis, E
Ferruginous hawk, Buteo regalis, SC
Interior least tern, Sterna antillarum, E
Loggerhead shrike, Lanius ludovicianus, SC
Mountain plover, Charadrius montanus, C
Northern aplomado falcon, Falco femoralis septentrionalis, E
Northern goshawk, Accipiter gentilis, SC
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
Western burrowing owl, Athene cunicularia hypugea, SC
White-faced ibis, Plegadis chihi, SC
Arkansas River shiner, Notropis girardi, PE w/CH
Headwater catfish, Ictalurus lupus, SC
Pecos bluntnose shiner, Notropis simus pecosensis, T w/CH
Pecos gambusia, Gambusia nobilis, E
Pecos pupfish, Cyprinodon pecosensis, C
Plains minnow, Hybognathus placitus*, SC
Rio Grande shiner, Notropis jemezanus, SC
Dunes sagebrush lizard, Sceloporus arenicolus, SC
Texas horned lizard, Phrynosoma cornutum, SC
Koster's tryonia (springsnail), Tryonia kosteri, C
Noel's amphipod, Gammarus desperatus, SC
Pecos assiminea snail, Assiminea pecos, C
Roswell springsnail, "Fontelicella" roswellensis, C
Kuenzler hedgehog cactus, Echinocereus fendleri var. kuenzleri, E
Puzzle sunflower, Helianthus paradoxus, C
Wright's marsh thistle, Cirsium wrightii, SC

Cibola

Big free-tailed bat, *Nyctinomops macrotis* (= *Tadarida m.*, *T. molossa*), SC
Black-footed ferret, *Mustela nigripes*, E
Cebolleta southern pocket gopher, *Thomomys umbrinus paguatae*, SC
Fringed myotis, *Myotis thysanodes*, SC
Long-eared myotis, *Myotis evotis*, SC
Long-legged myotis, *Myotis volans*, SC
Occult little brown bat, *Myotis lucifugus occultus*, SC
Small-footed myotis, *Myotis ciliolabrum*, SC
Spotted bat, *Euderma maculatum*, SC
Yuma myotis, *Myotis yumanensis*, SC
American peregrine falcon, *Falco peregrinus anatum*, E
Arctic peregrine falcon, *Falco peregrinus tundrius*, T (S/A)
Bald eagle, *Haliaeetus leucocephalus*, T
Ferruginous hawk, *Buteo regalis*, SC
Loggerhead shrike, *Lanius ludovicianus*, SC
Mexican spotted owl, *Strix occidentalis lucida*, T w/CH
Mountain plover, *Charadrius montanus*, C
Northern goshawk, *Accipiter gentilis*, SC
Southwestern willow flycatcher, *Empidonax traillii extimus*, E w/PCH
Western burrowing owl, *Athene cunicularia hypugea*, SC
Zuni bluehead sucker, *Catostomus discobolus yarrowi*, SC
Texas horned lizard, *Phrynosoma cornutum*, SC
Acoma fleabane, *Erigeron acomanus*, SC
Cinder phacelia, *Phacelia serrata*, SC
Gypsum phacelia, *Phacelia* sp. nov./ined., SC
Puzzle sunflower, *Helianthus paradoxus*, C
Santa Fe cholla, *Opuntia viridiflora*, SC
Zuni (=rhizome) fleabane, *Erigeron rhizomatus*, T

Colfax

Black-footed ferret, *Mustela nigripes*, E
Fringed myotis, *Myotis thysanodes*, SC
Long-eared myotis, *Myotis evotis*, SC
Long-legged myotis, *Myotis volans*, SC
New Mexican meadow jumping mouse, *Zapus hudsonius luteus*, SC
Occult little brown bat, *Myotis lucifugus occultus*, SC
Swift fox, *Vulpes velox*, C
American peregrine falcon, *Falco peregrinus anatum*, E
Arctic peregrine falcon, *Falco peregrinus tundrius*, T (S/A)
Baird's sparrow, *Ammodramus bairdii*, SC
Bald eagle, *Haliaeetus leucocephalus*, T
Black tern, *Chlidonias niger*, SC
Loggerhead shrike, *Lanius ludovicianus*, SC
Ferruginous hawk, *Buteo regalis*, SC
Mexican spotted owl, *Strix occidentalis lucida*, T w/CH
Mountain plover, *Charadrius montanus*, C
Northern goshawk, *Accipiter gentilis*, SC
Piping plover, *Charadrius melodus*, T
Southwestern willow flycatcher, *Empidonax traillii extimus*, E w/PCH
Western burrowing owl, *Athene cunicularia hypugea*, SC
White-faced ibis, *Plegadis chihi*, SC
Flathead chub, *Platygobio* (= *Hybopsis*) *gracilis*, SC
Plains minnow, *Hybognathus placitus*, SC
Texas horned lizard, *Phrynosoma cornutum*, SC
Dwarf milkweed, *Asclepias uncialis* var. *uncialis*, SC

Curry

Black-footed ferret, *Mustela nigripes*, E
Swift fox, *Vulpes velox*, C
American peregrine falcon, *Falco peregrinus anatum*, E
Arctic peregrine falcon, *Falco peregrinus tundrius*, T (S/A)
Baird's sparrow, *Ammodramus bairdii*, SC
Bald eagle, *Haliaeetus leucocephalus*, T
Ferruginous hawk, *Buteo regalis*, SC
Loggerhead shrike, *Lanius ludovicianus*, SC
Western burrowing owl, *Athene cunicularia hypugea*, SC
Texas horned lizard, *Phrynosoma cornutum*, SC

DeBaca

Black-footed ferret, Mustela nigripes, E
Swift fox, Vulpes velox, C
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Ferruginous hawk, Buteo regalis, SC
Interior least tern, Sterna antillarum, E
Loggerhead shrike, Lanius ludovicianus, SC
Mountain plover, Charadrius montanus, C
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
Western burrowing owl, Athene cunicularia hypugea, SC
White-faced ibis, Plegadis chihi, SC
Flathead chub, Platygobio (= Hybopsis) gracilis, SC
Headwater catfish, Ictalurus lupus, SC
Pecos bluntnose shiner, Notropis simus pecosensis, T w/CH
Plains minnow, Hybognathus placitus*, SC
Rio Grande shiner, Notropis jemezanus, SC
Texas horned lizard, Phrynosoma cornutum, SC

Doña Ana

Big free-tailed bat, Nyctinomops macrotis (= Tadarida m., T. molossa), SC
Black-footed ferret, Mustela nigripes, E
Desert pocket gopher, Geomys bursarius arenarius, SC
Fringed myotis, Myotis thysanodes, SC
Greater western mastiff bat, Eumops perotis californicus, SC
Long-legged myotis, Myotis volans, SC
Occult little brown bat, Myotis lucifugus occultus, SC
Organ Mountains Colorado chipmunk, Eutamias quadrivittatus australis, SC
Pale Townsend's (= western) big-eared bat, Plecotus townsendii pallescens, SC
Pecos River muskrat, Ondatra zibethicus ripensis, SC
Small-footed myotis, Myotis ciliolabrum, SC
Spotted bat, Euderma maculatum, SC
White Sands woodrat, Neotoma micropus leucophaea, SC
Yuma myotis, Myotis yumanensis, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Black tern, Chlidonias niger, SC
Ferruginous hawk, Buteo regalis, SC
Interior least tern, Sterna antillarum, E
Loggerhead shrike, Lanius ludovicianus, SC
Mexican spotted owl, Strix occidentalis lucida, T w/CH
Northern aplomado falcon, Falco femoralis septentrionalis, E
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
Western burrowing owl, Athene cunicularia hypugea, SC
White-faced ibis, Plegadis chihi, SC
Whooping crane, Grus americana, E
Texas horned lizard, Phrynosoma cornutum, SC
Anthony blister beetle, Lytta mirifica, SC
Doña Ana talussnail, Sonorella todseni, SC
Alamo beardtongue, Penstemon alamosensis, SC
Desert night-blooming cereus, Cereus greggii var. greggii, SC
Mescalero milkwort, Polygala rimulicola var. mescalerorum, SC
Nodding rock-daisy, Perityle cernua, SC
Organ Mountain evening-primrose, Oenothera organensis, SC
Organ Mountain figwort, Scrophularia laevis, SC
Sand prickly pear, Opuntia arenaria, SC
Sandhill goosefoot, Chenopodium cycloides, SC
Sneed pincushion cactus, Coryphantha sneedii var. sneedii, E
Standley whitlow-grass, Draba standleyi, SC

Eddy

Arizona black-tailed prairie dog, Cynomys ludovicianus arizonensis, SC
Big free-tailed bat, Nyctinomops macrotis (= Tadarida m., T. molossa), SC
Black-footed ferret, Mustela nigripes, E
Cave myotis, Myotis velifer, SC
Fringed myotis, Myotis thysanodes, SC
Gray-footed chipmunk, Tamias canipes, SC
Guadalupe southern pocket gopher, Thomomys umbrinus guadalupensis, SC
Long-legged myotis, Myotis volans, SC
Occult little brown bat, Myotis lucifugus occultus, SC
Pale Townsend's (= western) big-eared bat, Plecotus townsendii pallescens, SC
Pecos River muskrat, Ondatra zibethicus ripensis, SC
Small-footed myotis, Myotis ciliolabrum, SC
Swift fox, Vulpes velox, C
Yuma myotis, Myotis yumanensis, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Black tern, Chlidonias niger, SC
Brown pelican, Pelecanus occidentalis, E
Ferruginous hawk, Buteo regalis, SC
Interior least tern, Sterna antillarum, E
Loggerhead shrike, Lanius ludovicianus, SC
Mexican spotted owl, Strix occidentalis lucida, T w/CH
Northern aplomado falcon, Falco femoralis septentrionalis, E
Northern goshawk, Accipiter gentilis, SC
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
Western burrowing owl, Athene cunicularia hypugea, SC
White-faced ibis, Plegadis chihi, SC
Blue sucker, Cycleptus elongatus, SC
Headwater catfish, Ictalurus lupus, SC
Pecos bluntnose shiner, Notropis simus pecosensis, T w/CH
Pecos gambusia, Gambusia nobilis, E
Pecos pupfish, Cyprinodon pecosensis, C
Plains minnow, Hybognathus placitus*, SC
Rio Grande shiner, Notropis jemezanus, SC
Dunes sagebrush lizard, Sceloporus arenicolus, SC
Texas horned lizard, Phrynosoma cornutum, SC
Ovate vertigo (snail), Vertigo ovata, SC
Pecos springsnail, "Fontelicella" pecosensis, SC
Texas hornshell (mussel), Popenaias popei, SC
Few-flowered jewelflower, Streptanthus sparsiflorus, SC
Glass Mountain coral-root, Hexalectris nitida, SC
Guadalupe rabbitbrush, Chrysothamnus nauseosus var. texensis, SC

Eddy, continued

Gypsum wild-buckwheat, *Eriogonum gypsophilum*, T w/CH
Kuenzler hedgehog cactus, *Echinocereus fendleri* var. *Kuenzleri*, E
Lee pincushion cactus, *Coryphantha sneedii* var. *leei*, T
Lloyd's hedgehog cactus, *Echinocereus lloydii*, E
Mat leastdaisy, *Chaetopappa hersheyi*, SC
Tharp's blue-star, *Amsonia tharpii*, SC
Wright's water-willow, *Justicia wrightii*, SC

Grant

Black-footed ferret, *Mustela nigripes*, E
Cave myotis, *Myotis velifer*, SC
Fringed myotis, *Myotis thysanodes*, SC
Greater western mastiff bat, *Eumops perotis californicus*, SC
Long-eared myotis, *Myotis evotis*, SC
Long-legged myotis, *Myotis volans*, SC
Mexican gray wolf, *Canis lupus baileyi*, E
Occult little brown bat, *Myotis lucifugus occultus*, SC
Pale Townsend's (= western) big-eared bat, *Plecotus townsendii pallescens*, SC
Small-footed myotis, *Myotis ciliolabrum*, SC
Spotted bat, *Euderma maculatum*, SC
White-sided jackrabbit, *Lepus callotis gaillardi*, SC
Yuma myotis, *Myotis yumanensis*, SC
American peregrine falcon, *Falco peregrinus anatum*, E
Arctic peregrine falcon, *Falco peregrinus tundrius*, T (S/A)
Baird's sparrow, *Ammodramus bairdii*, SC
Bald eagle, *Haliaeetus leucocephalus*, T
Brown pelican, *Pelecanus occidentalis*, E
Ferruginous hawk, *Buteo regalis*, SC
Loggerhead shrike, *Lanius ludovicianus*, SC
Mexican spotted owl, *Strix occidentalis lucida*, T w/CH
Northern aplomado falcon, *Falco femoralis septentrionalis*, E
Northern goshawk, *Accipiter gentilis*, SC
Northern gray hawk, *Buteo nitidus maximus*, SC
Southwestern willow flycatcher, *Empidonax traillii extimus*, E w/PCH
Whooping crane, *Grus americana*, E
Beautiful shiner, *Cyprinella formosa*, T
Chihuahua chub, *Gila nigrescens*, T
Desert sucker, *Catostomus clarki*, SC
Gila chub, *Gila intermedia*, SC
Gila topminnow, *Poeciliopsis occidentalis*, E
Gila trout, *Oncorhynchus gilae*, E
Loach minnow, *Rhinichthys cobitis*, T
Longfin dace, *Agosia chrysogaster*, SC
Roundtail chub, *Gila robusta*, SC
Sonora sucker, *Catostomus insignis*, SC
Speckled dace, *Rhinichthys osculus* (Gila drainage), SC
Spikedace, *Meda fulgida*, T
Mexican garter snake, *Thamnophis eques*, SC
Narrowhead garter snake, *Thamnophis rufipunctatus*, SC
Texas horned lizard, *Phrynosoma cornutum*, SC
Arizona southwestern toad, *Bufo microscaphus microscaphus*, SC
Chiricahua leopard frog, *Rana chiricahuensis*, C
Lowland leopard frog, *Rana yavapaiensis*, SC

Grant, continued

Gila springsnail, "Fontelicella" gilae, C
New Mexico hotspring snail, "Fontelicella" thermals, C
Shortneck snaggletooth (snail), Gastrocopta dalliana dalliana, SC
Desert night-blooming cereus, Cereus greggii var greggii, SC
Dwarf milkweed, Asclepias uncialis var. uncialis, SC
Parish's alkali grass, Puccinellia parishii, PE
Pinos Altos fameflower, Talinum humile, SC
Porsild's starwort, Stellaria porsildii, SC
San Carlos wild-buckwheat, Eriogonum capillare, SC
Slender spiderflower, Cleome multicaulis, SC
Wright's dogweed, Adenophyllum wrightii var. wrightii, SC

Guadalupe

Black-footed ferret, *Mustela nigripes*, E
Pecos River muskrat, *Ondatra zibethicus ripensis*, SC
Small-footed myotis, *Myotis ciliolabrum*, SC
Spotted bat, *Euderma maculatum*, SC
Swift fox, *Vulpes velox*, C
American peregrine falcon, *Falco peregrinus anatum*, E
Arctic peregrine falcon, *Falco peregrinus tundrius*, T (S/A)
Baird's sparrow, *Ammodramus bairdii*, SC
Bald eagle, *Haliaeetus leucocephalus*, T
Brown pelican, *Pelecanus occidentalis*, E
Ferruginous hawk, *Buteo regalis*, SC
Loggerhead shrike, *Lanius ludovicianus*, SC
Mountain plover, *Charadrius montanus*, C
Southwestern willow flycatcher, *Empidonax traillii extimus*, E w/PCH
White-faced ibis, *Plegadis chihi*, SC
Flathead chub, *Platygobio* (= *Hybopsis*) *gracilis*, SC
Plains minnow, *Hybognathus placitus**, SC
Rio Grande shiner, *Notropis jemezanus*, SC
Texas horned lizard, *Phrynosoma cornutum*, SC
Puzzle sunflower, *Helianthus paradoxus*, C
Wright's marsh thistle, *Cirsium wrightii*, SC

Harding

Black-footed ferret, Mustela nigripes, E
Swift fox, Vulpes velox, C
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Ferruginous hawk, Buteo regalis, SC
Loggerhead shrike, Lanius ludovicianus, SC
Mountain plover, Charadrius montanus, C
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
Western burrowing owl, Athene cunicularia hypugea, SC
White-faced ibis, Plegadis chihi, SC
Arkansas River shiner, Notropis girardi, PE w/CH
Flathead chub, Platygobio (= Hybopsis) gracilis, SC
Plains minnow, Hybognathus placitus, SC
Texas horned lizard, Phrynosoma cornutum, SC
Santa Fe cholla, Opuntia viridiflora, SC
Spellenberg's groundsel, Senecio spellenbergii, SC

Hidalgo

Arizona shrew, Sorex arizonae, SC
Big free-tailed bat, Nyctinomops macrotis (= Tadarida m., T. molossa), SC
Black-footed ferret, Mustela nigripes, E
California leaf-nosed bat, Macrotus californicus, SC
Cave myotis, Myotis velifer, SC
Fringed myotis, Myotis thysanodes, SC
Greater western mastiff bat, Eumops perotis californicus, SC
Lesser long-nosed bat, Leptonycteris curasoae yerbabuenae, E
Long-legged myotis, Myotis volans, SC
Mearns' southern pocket gopher, Thomomys umbrinus mearnsi, SC
Mexican gray wolf, Canis lupus baileyi, E
Mexican long-nosed bat, Leptonycteris nivalis, E
Mexican long-tongued bat, Choeronycteris mexicana, SC
Occult little brown bat, Myotis lucifugus occultus, SC
Pale Townsend's (= western) big-eared bat, Plecotus townsendii pallescens, SC
Small-footed myotis, Myotis ciliolabrum, SC
Spotted bat, Euderma maculatum, SC
White-sided jackrabbit, Lepus callotis gaillardi, SC
Yellow-nosed cotton rat, Sigmodon ochrognathus, SC
Yuma myotis, Myotis yumanensis, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Ferruginous hawk, Buteo regalis, SC
Loggerhead shrike, Lanius ludovicianus, SC
Mexican spotted owl, Strix occidentalis lucida, T w/CH
Northern aplomado falcon, Falco femoralis septentrionalis, E
Northern goshawk, Accipiter gentilis, SC
Northern gray hawk, Buteo nitidus maximus, SC
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
Western burrowing owl, Athene cunicularia hypugea, SC
Desert sucker, Catostomus clarki, SC
Loach minnow, Rhinichthys cobitis, T
Longfin dace, Agosia chrysogaster, SC
Roundtail chub, Gila robusta, SC
Sonora sucker, Catostomus insignis, SC
Spikedace, Meda fulgida, T
Canyon (giant) spotted whiptail, Cnemidophorus burti, SC
Gray-checkered whiptail, Cnemidophorus dixoni, SC
Mexican garter snake, Thamnophis eques, SC
Narrowhead garter snake, Thamnophis rufipunctatus, SC
New Mexican ridge-nosed rattlesnake, Crotalus willardi obscurus, T w/CH
Texas horned lizard, Phrynosoma cornutum, SC

Hidalgo, continued

Arizona southwestern toad, Bufo microscaphus microscaphus, SC
Chiricahua leopard frog, Rana chiricahuensis, C
Lowland leopard frog, Rana yavapaiensis, SC
Animas minute moss beetle, Limnebius aridus, SC
Hacheta Grande woodlandsnail, Ashmunella hebardi, SC
Shortneck snaggletooth (snail), Gastrocopta dalliana dalliana, SC
Chiricahua mudwort, Limosella publiflora, SC
Contra yerba, Pediomelum pentaphyllum, SC
Coppermine milk-vetch, Astracgalus cobrensis var. maguirei, SC
Desert night-blooming cereus, Cereus greggii var. greggii, SC
Griffith's saltbush, Atriplex griffithsii, SC
Gypsum hotspring aster, Machaeranthera gypsitherma, SC
Limestone rosewood, Vauquelinia californica ssp. pauciflora, SC
Ornate paintbrush, Castilleja ornata, SC
Parish's alkali grass, Puccinellia parishii, PE
San Carlos wild-buckwheat, Eriogonum capillare, SC

Lea

Black-footed ferret, Mustela nigripes, E
Cave myotis, Myotis velifer, SC
Swift fox, Vulpes velox, C
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Ferruginous hawk, Buteo regalis, SC
Loggerhead shrike, Lanius ludovicianus, SC
Northern aplomado falcon, Falco femoralis septentrionalis, E
Western burrowing owl, Athene cunicularia hypugea, SC
Dunes sagebrush lizard, Sceloporus arenicolus, SC
Texas horned lizard, Phrynosoma cornutum, SC

Lincoln

Arizona black-tailed prairie dog, Cynomys ludovicianus arizonensis, SC
Black-footed ferret, Mustela nigripes, E
Cave myotis, Myotis velifer, SC
Fringed myotis, Myotis thysanodes, SC
Gray-footed chipmunk, Tamias canipes, SC
Long-legged myotis, Myotis volans, SC
New Mexican meadow jumping mouse, Zapus hudsonius luteus, SC
Occult little brown bat, Myotis lucifugus occultus, SC
Organ Mountains Colorado chipmunk, Eutamias quadrivittatus australis, SC
Pale Townsend's (= western) big-eared bat, Plecotus townsendii pallescens, SC
Pecos River muskrat, Ondatra zibethicus ripensis, SC
Small-footed myotis, Myotis ciliolabrum, SC
Yuma myotis, Myotis yumanensis, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Ferruginous hawk, Buteo regalis, SC
Loggerhead shrike, Lanius ludovicianus, SC
Mexican spotted owl, Strix occidentalis lucida, T w/CH
Mountain plover, Charadrius montanus, C
Northern aplomado falcon, Falco femoralis septentrionalis, E
Northern goshawk, Accipiter gentilis, SC
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
Longfin dace, Agosia chrysogaster*, SC
White Sands pupfish, Cyprinodon tularosa, SC
Sacramento mountain salamander, Aneides hardii, SC
Texas horned lizard, Phrynosoma cornutum, SC
Bonita diving beetle, Deronectes neomexicana, SC
Goodding's onion, Allium gooddingii, C
Kuenzler hedgehog cactus, Echinocereus fendleri var. kuenzleri, E
Sierra Blanca cliffdaisy, Chaetopappa elegans, SC
Wright's marsh thistle, Cirsium wrightii, SC

Los Alamos

Big free-tailed bat, Nyctinomops macrotis (= Tadarida m., T. molossa), SC
Black-footed ferret, Mustela nigripes, E
Goat Peak pika, Ochotona princeps nigrescens, SC
Long-legged myotis, Myotis volans, SC
New Mexican meadow jumping mouse, Zapus hudsonius luteus, SC
Occult little brown bat, Myotis lucifugus occultus, SC
Spotted bat, Euderma maculatum, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Bald eagle, Haliaeetus leucocephalus, T
Ferruginous hawk, Buteo regalis, SC
Mexican spotted owl, Strix occidentalis lucida, T w/CH
Loggerhead shrike, Lanius ludovicianus, SC
Northern goshawk, Accipiter gentilis, SC
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
White-faced ibis, Plegadis chihi, SC
Whooping crane, Grus americana, E
Flathead chub, Platygobio (= Hybopsis) gracilis, SC
Jemez Mountains salamander, Plethodon neomexicanus, SC

Luna

Black-footed ferret, Mustela nigripes, E
Cave myotis, Myotis velifer, SC
Desert pocket gopher, Geomys bursarius arenarius, SC
Fringed myotis, Myotis thysanodes, SC
Greater western mastiff bat, Eumops perotis californicus, SC
Long-legged myotis, Myotis volans, SC
Mexican grey wolf, Canis lupus baileyi, E
Pale Townsend's (= western) big-eared bat, Plecotus townsendii pallescens, SC
Spotted bat, Euderma maculatum, SC
White-sided jackrabbit, Lepus callotis gaillardi, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Ferruginous hawk, Buteo regalis, SC
Loggerhead shrike, Lanius ludovicianus, SC
Mountain plover, Charadrius montanus, C
Northern aplomado falcon, Falco femoralis septentrionalis, E
Northern gray hawk, Buteo nitidus maximus, SC
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
Western burrowing owl, Athene cunicularia hypugea, SC
Whooping crane, Grus americana, E
Beautiful shiner, Cyprinella formosa, T
Longfin dace, Agosia chrysogaster, SC
Chiricahua leopard frog, Rana chiricahuensis, C
Texas horned lizard, Phrynosoma cornutum, SC
Cook's Peak woodlandsnail, Ashmunella macromphala, SC
Florida mountainsnail, Oreohelix florida, SC
Shortneck snaggletooth (snail), Gastrocopta dalliana dalliana, SC
Desert night-blooming cereus, Cereus greggii var. greggii, SC
Sand prickly pear, Opuntia arenaria, SC

McKinley

Black-footed ferret, Mustela nigripes, E
Fringed myotis, Myotis thysanodes, SC
Long-eared myotis, Myotis evotis, SC
Long-legged myotis, Myotis volans, SC
Occult little brown bat, Myotis lucifugus occultus, SC
Small-footed myotis, Myotis ciliolabrum, SC
Spotted bat, Euderma maculatum, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Bald eagle, Haliaeetus leucocephalus, T
Black tern, Chlidonias niger, SC
Ferruginous hawk, Buteo regalis, SC
Loggerhead shrike, Lanius ludovicianus, SC
Mexican spotted owl, Strix occidentalis lucida, T w/CH
Northern goshawk, Accipiter gentilis, SC
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
Western burrowing owl, Athene cunicularia hypugea, SC
White-faced ibis, Plegadis chihi, SC
Zuni bluehead sucker, Catostomus discobolus yarrowi, SC
Acoma fleabane, Erigeron acomanus, SC
Arizona leatherflower, Clematis hirsutissima var arizonica, C
Goodding's onion, Allium gooddingii, C
Parish's alkali grass, Puccinellia parishii, PE
Sivinski's fleabane, Erigeron sivinskii, SC
Zuni (=rhizome) fleabane, Erigeron rhizomatus, T

Mora

Black-footed ferret, Mustela nigripes, E
Fringed myotis, Myotis thysanodes, SC
Long-legged myotis, Myotis volans, SC
New Mexican meadow jumping mouse, Zapus hudsonius luteus, SC
Occult little brown bat, Myotis lucifugus occultus, SC
Pale Townsend's (= western) big-eared bat, Plecotus townsendii pallescens, SC
Spotted bat, Euderma maculatum, SC
Swift fox, Vulpes velox, C
Yuma myotis, Myotis yumanensis, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Ferruginous hawk, Buteo regalis, SC
Loggerhead shrike, Lanius ludovicianus, SC
Mexican spotted owl, Strix occidentalis lucida, T w/CH
Mountain plover, Charadrius montanus, C
Northern goshawk, Accipiter gentilis, SC
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
Western burrowing owl, Athene cunicularia hypugea, SC
White-faced ibis, Plegadis chihi, SC
Arkansas River shiner, Notropis girardi, PE w/CH
Flathead chub, Platygobio (= Hybopsis) gracilis, SC
Texas horned lizard, Phrynosoma cornutum, SC

Otero

Arizona black-tailed prairie dog, Cynomys ludovicianus arizonensis, SC
Big free-tailed bat, Nyctinomops macrotis (= Tadarida m., T. molossa), SC
Black-footed ferret, Mustela nigripes, E
Cave myotis, Myotis velifer, SC
Desert pocket gopher, Geomys bursarius arenarius, SC
Fringed myotis, Myotis thysanodes, SC
Gray-footed chipmunk, Tamias canipes, SC
Greater western mastiff bat, Eumops perotis californicus, SC
Guadalupe southern pocket gopher, Thomomys umbrinus guadalupensis, SC
Long-legged myotis, Myotis volans, SC
New Mexican meadow jumping mouse, Zapus hudsonius luteus, SC
Occult little brown bat, Myotis lucifugus occultus, SC
Pale Townsend's (= western) big-eared bat, Plecotus townsendii pallescens, SC
Small-footed myotis, Myotis ciliolabrum, SC
White Sands woodrat, Neotoma micropus leucophaea, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T(S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Black tern, Chlidonias niger, SC
Ferruginous hawk, Buteo regalis, SC
Interior least tern, Sterna antillarum athalassos, E
Loggerhead shrike, Lanius ludovicianus, SC
Mexican spotted owl, Strix occidentalis lucida, T w/CH
Northern aplomado falcon, Falco femoralis septentrionalis, E
Northern goshawk, Accipiter gentilis, SC
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
Western burrowing owl, Athene cunicularia hypugea, SC
White-faced ibis, Plegadis chihi, SC
White Sands pupfish, Cyprinodon tularosa, SC
Sacramento mountain salamander, Aneides hardii, SC
Texas horned lizard, Phrynosoma cornutum, SC
Alamo beardtongue, Penstemon alamosensis, SC
Desert night-blooming cereus, Cereus greggii var. greggii, SC
Goodding's onion, Allium gooddingii, C
Guadalupe rabbitbrush, Chrysothamnus nauseosus var. texensis, SC
Gypsum scalebroom, Lepidospartum burgessii, SC
Kuenzler hedgehog cactus, Echinocereus fendleri var. kuenzleri, E
Sacramento Mountains thistle, Cirsium vinaceum, T
Sacramento prickly poppy, Argemone pleiacantha ssp. pinnatisecta, E
Sierra Blanca cliffdaisy, Chaetopappa elegans, SC
Todsen's pennyroyal, Hedeoma todsenii, E
Villard's pincushion cactus, Escobaria villardii, SC
Wright's marsh thistle, Cirsium wrightii, SC

Quay

Black-footed ferret, Mustela nigripes, E
Swift fox, Vulpes velox, C
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Black tern, Chlidonias niger, SC
Ferruginous hawk, Buteo regalis, SC
Loggerhead shrike, Lanius ludovicianus, SC
Mountain plover, Charadrius montanus, C
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
Western burrowing owl, Athene cunicularia hypugea, SC
White-faced ibis, Plegadis chihi, SC
Arkansas River shiner, Notropis girardi, PE w/CH
Arkansas River speckled chub, Hybopsis aestivalis tetranemus, SC
Flathead chub, Platygobio (= Hybopsis) gracilis, SC
Plains minnow, Hybognathus placitus, SC
Texas horned lizard, Phrynosoma cornutum, SC

Rio Arriba

Big free-tailed bat, Nyctinomops macrotis (= Tadarida m., T. molossa), SC
Black-footed ferret, Mustela nigripes, E
Goat Peak pika, Ochotona princeps nigrescens, SC
Long-eared myotis, Myotis evotis, SC
Long-legged myotis, Myotis volans, SC
New Mexican meadow jumping mouse, Zapus hudsonius luteus, SC
Occult little brown bat, Myotis lucifugus occultus, SC
Pale Townsend's (= western) big-eared bat, Plecotus townsendii pallescens, SC
Small-footed myotis, Myotis ciliolabrum, SC
Southwestern otter, Lutra canadensis sonorae, SC
Spotted bat, Euderma maculatum, SC
Yuma myotis, Myotis yumanensis, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Black tern, Chlidonias niger, SC
Ferruginous hawk, Buteo regalis, SC
Harlequin duck, Histrionicus histrionicus, SC
Interior least tern, Sterna antillarum athalassos, E
Loggerhead shrike, Lanius ludovicianus, SC
Mexican spotted owl, Strix occidentalis lucida, T w/CH
Northern goshawk, Accipiter gentilis, SC
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
White-faced ibis, Plegadis chihi, SC
Whooping crane, Grus americana, E
Colorado squawfish, Ptychocheilus lucius, E
Flathead chub, Platygobio (= Hybopsis) gracilis, SC
Roundtail chub, Gila robusta, SC
Boreal western toad, Bufo boreas boreas, C
Jemez Mountains salamander, Plethodon neomexicanus, SC
Arizona willow, Salix arizonica, SC
Ripley milk-vetch, Astragalus ripleyi, SC

Roosevelt

Black-footed ferret, Mustela nigripes, E
Swift fox, Vulpes velox, C
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Ferruginous hawk, Buteo regalis, SC
Loggerhead shrike, Lanius ludovicianus, SC
Western burrowing owl, Athene cunicularia hypugea, SC
Whooping crane, Grus americana, E
Dunes sagebrush lizard, Sceloporus arenicolus, SC
Texas horned lizard, Phrynosoma cornutum, SC
Sandhill goosefoot, Chenopodium cycloides, SC

Sandoval

Big free-tailed bat, Nyctinomops macrotis (= Tadarida m., T. molossa), SC
Black-footed ferret, Mustela nigripes, E
Fringed myotis, Myotis thysanodes, SC
Goat Peak pika, Ochotona princeps nigrescens, SC
Long-eared myotis, Myotis evotis, SC
Long-legged myotis, Myotis volans, SC
New Mexican meadow jumping mouse, Zapus hudsonius luteus, SC
Occult little brown bat, Myotis lucifugus occultus, SC
Pale Townsend's (= western) big-eared bat, Plecotus townsendii pallescens, SC
Small-footed myotis, Myotis ciliolabrum, SC
Spotted bat, Euderma maculatum, SC
Yuma myotis, Myotis yumanensis, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Ferruginous hawk, Buteo regalis, SC
Loggerhead shrike, Lanius ludovicianus, SC
Mexican spotted owl, Strix occidentalis lucida, T w/CH
Mountain plover, Charadrius montanus, C
Northern goshawk, Accipiter gentilis, SC
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
Western burrowing owl, Athene cunicularia hypugea, SC
White-faced ibis, Plegadis chihi, SC
Whooping crane, Grus americana, E
Flathead chub, Platygobio (= Hybopsis) gracilis, SC
Rio Grande silvery minnow, Hybognathus amarus, E w/PCH
Jemez Mountain salamander, Plethodon neomexicanus, SC
Gypsum phacelia, Phacelia sp. nov./ined., SC
Gypsum townsendia, Townsendia gypsophila, SC
Knight's milk-vetch, Astragalus knightii, SC
Parish's alkali grass, Puccinellia parishii, PE

San Juan

Big free-tailed bat, Nyctinomops macrotis (= Tadarida m., T. molossa), SC
Black-footed ferret, Mustela nigripes, E
Fringed myotis, Myotis thysanodes, SC
Long-eared myotis, Myotis evotis, SC
Long-legged myotis, Myotis volans, SC
Occult little brown bat, Myotis lucifugus occultus, SC
Pale Townsend's (= western) big-eared bat, Plecotus townsendii pallescens, SC
Small-footed myotis, Myotis ciliolabrum, SC
Spotted bat, Euderma maculatum, SC
Yuma myotis, Myotis yumanensis, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Black tern, Chlidonias niger, SC
Brown pelican, Pelecanus occidentalis, E
Ferruginous hawk, Buteo regalis, SC
Loggerhead shrike, Lanius ludovicianus, SC
Mexican spotted owl, Strix occidentalis lucida, T w/CH
Mountain plover, Charadrius montanus, C
Northern goshawk, Accipiter gentilis, SC
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
Western burrowing owl, Athene cunicularia hypugea, SC
White-faced ibis, Plegadis chihi, SC
Colorado squawfish, Ptychocheilus lucius, E
Razorback sucker, Xyrauchen texanus, E
Roundtail chub, Gila robusta, SC
Arizona leatherflower, Clematis hirsutissima var. arizonica, C
Beautiful gilia, Gilia formosa, SC
Bisti fleabane, Erigeron bistiensis, SC
Brack's fishhook cactus, Sclerocactus cloveriae var. brackii, SC
Goodding's onion, Allium gooddingii, C
Knowlton cactus, Pediocactus knowltonii, E
Mancos milk-vetch, Astragalus humillimus, E
Mesa Verde cactus, Sclerocactus mesae-verdae, T
Parish's alkali grass, Puccinellia parishii, PE
Santa Fe cholla, Opuntia viridiflora, SC

San Miguel

Black-footed ferret, Mustela nigripes, E
Fringed myotis, Myotis thysanodes, SC
Long-eared myotis, Myotis evotis, SC
Long-legged myotis, Myotis volans, SC
New Mexican meadow jumping mouse, Zapus hudsonius luteus, SC
Occult little brown bat, Myotis lucifugus occultus, SC
Pale Townsend's (= western) big-eared bat, Plecotus townsendii pallescens, SC
Pecos River muskrat, Ondatra zibethicus ripensis, SC
Small-footed myotis, Myotis ciliolabrum, SC
Spotted bat, Euderma maculatum, SC
Swift fox, Vulpes velox, C
Yuma myotis, Myotis yumanensis, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Black tern, Chlidonias niger, SC
Brown pelican, Pelecanus occidentalis, E
Ferruginous hawk, Buteo regalis, SC
Loggerhead shrike, Lanius ludovicianus, SC
Mexican spotted owl, Strix occidentalis lucida, T w/CH
Mountain plover, Charadrius montanus, C
Northern goshawk, Accipiter gentilis, SC
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
Western burrowing owl, Athene cunicularia hypugea, SC
White-faced ibis, Plegadis chihi, SC
Whooping crane, Grus americana, E
Arkansas River shiner, Notropis girardi, PE w/CH
Flathead chub, Platygobio (= Hybopsis) gracilis, SC
Plains minnow, Hybognathus placitus, SC
Texas horned lizard, Phrynosoma cornutum, SC
Dwarf milkweed, Asclepias uncialis var. uncialis, SC
Holy Ghost ipomopsis, Ipomopsis sancti-spritus, E

Santa Fe

Black-footed ferret, *Mustela nigripes*, E
Fringed myotis, *Myotis thysanodes*, SC
Long-legged myotis, *Myotis volans*, SC
New Mexican meadow jumping mouse, *Zapus hudsonius luteus*, SC
Occult little brown bat, *Myotis lucifugus occultus*, SC
Pale Townsend's (=western) big-eared bat, *Plecotus townsendii pallescens*, SC
Small-footed myotis, *Myotis ciliolabrum*, SC
Spotted bat, *Euderma maculatum*, SC
Yuma myotis, *Myotis yumanensis*, SC
American peregrine falcon, *Falco peregrinus anatum*, E
Arctic peregrine falcon, *Falco peregrinus tundrius*, T (S/A)
Baird's sparrow, *Ammodramus bairdii*, SC
Bald eagle, *Haliaeetus leucocephalus*, T
Ferruginous hawk, *Buteo regalis*, SC
Loggerhead shrike, *Lanius ludovicianus*, SC
Mexican spotted owl, *Strix occidentalis lucida*, T w/CH
Mountain plover, *Charadrius montanus*, C
Northern goshawk, *Accipiter gentilis*, SC
Southwestern willow flycatcher, *Empidonax traillii extimus*, E w/PCH
White-faced ibis, *Plegadis chihi*, SC
Whooping crane, *Grus americana*, E
Flathead chub, *Platygobio* (= *Hybopsis*) *gracilis*, SC
Texas horned lizard, *Phrynosoma cornutum*, SC
Santa Fe cholla, *Opuntia viridiflora*, SC

Sierra

Arizona black-tailed prairie dog, Cynomys ludovicianus arizonensis, SC
Black-footed ferret, Mustela nigripes, E
Fringed myotis, Myotis thysanodes, SC
Greater western mastiff bat, Eumops perotis californicus, SC
Long-eared myotis, Myotis evotis, SC
Long-legged myotis, Myotis volans, SC
Occult little brown bat, Myotis lucifugus occultus, SC
Organ Mountains Colorado chipmunk, Eutamias quadrivittatus australis, SC
Pale Townsend's (= western) big-eared bat, Plecotus townsendii pallescens, SC
Southwestern otter, Lutra canadensis sonorae, SC
Small-footed myotis, Myotis ciliolabrum, SC
Spotted bat, Euderma maculatum, SC
White Sands woodrat, Neotoma micropus leucophaea, SC
Yuma myotis, Myotis yumanensis, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Black tern, Chlidonias niger, SC
Brown pelican, Pelecanus occidentalis, E
Ferruginous hawk, Buteo regalis, SC
Loggerhead shrike, Lanius ludovicianus, SC
Mexican spotted owl, Strix occidentalis lucida, T w/CH
Northern aplomado falcon, Falco femoralis septentrionalis, E
Northern goshawk, Accipiter gentilis, SC
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
Western burrowing owl, Athene cunicularia hypugea, SC
White-faced ibis, Plegadis chihi, SC
Whooping crane, Grus americana, E
Desert sucker, Catostomus clarki, SC
Gila trout, Oncorhynchus gilae, E
Longfin dace, Agosia chrysogaster*, SC
Sonora sucker, Catostomus insignis, SC
Speckled dace, Rhinichthys osculus (Gila drainage), SC
White Sands pupfish, Cyprinodon tularosa, SC
Arizona southwestern toad, Bufo microscaphus microscaphus, SC
Chiricahua leopard frog, Rana chiricahuensis, C
Texas horned lizard, Phrynosoma cornutum, SC
Mineral Creek mountainsnail, Oreohelix pilsbryi, SC
Duncan's cory cactus, Coryphantha duncanii, SC
Pinos Altos fameflower, Talinum humile, SC
Sandhill goosefoot, Chenopodium cycloides, SC
Todsen's pennyroyal, Hedeoma todsenii, E w/CH

Socorro

Allen's (Mexican) big-eared bat, Idionycteris (= Plecotus) phyllotis, SC
Arizona black-tailed prairie dog, Cynomys ludovicianus arizonensis, SC
Black-footed ferret, Mustela nigripes, E
Desert pocket gopher, Geomys bursarius arenarius, SC
Fringed myotis, Myotis thysanodes, SC
Long-eared myotis, Myotis evotis, SC
Long-legged myotis, Myotis volans, SC
New Mexican meadow Jumping mouse, Zapus hudsonius luteus, SC
Occult little brown bat, Myotis lucifugus occultus, SC
Organ Mountains Colorado chipmunk, Eutamias quadrivittatus australis, SC
Pale Townsend's (= western) big-eared bat, Plecotus townsendii pallescens, SC
Pecos River muskrat, Ondatra zibethicus ripensis, SC
Small-footed myotis, Myotis ciliolabrum, SC
Spotted bat, Euderma maculatum, SC
Yuma myotis, Myotis yumanensis, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Black tern, Chlidonias niger, SC
Ferruginous hawk, Buteo regalis, SC
Interior least tern, Sterna antillarum, E
Loggerhead shrike, Lanius ludovicianus, SC
Mexican spotted owl, Strix occidentalis lucida, T w/CH
Mountain plover, Charadrius montanus, C
Northern aplomado falcon, Falco femoralis septentrionalis, E
Northern goshawk, Accipiter gentilis, SC
Piping plover, Charadrius melodus, T
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
White-faced ibis, Plegadis chihi, SC
Whooping crane, Grus americana, E w/CH
Flathead chub, Platygobio (= Hybopsis) gracilis, SC
Longfin dace, Agosia chrysogaster*, SC
Rio Grande silvery minnow, Hybognathus amarus, E w/PCH
Arizona southwestern toad, Bufo microscaphus microscaphus, SC
Texas horned lizard, Phrynosoma cornutum, SC
Chiricahua leopard frog, Rana chiricahuensis, SC
Socorro isopod, Exosphaeroma thermophilus, E
Alamosa springsnail, Tryonia alamosae, E
Chupadera springsnail, "Fontelicella" chupaderae, C
Socorro springsnail "Fontelicella" neomexicana, E
Fugate's blue-star, Amsonia fugatei, SC
Sandhill goosefoot, Chenopodium cycloides, SC

Taos

Black-footed ferret, Mustela nigripes, E
Fringed myotis, Myotis thysanodes, SC
Long-eared myotis, Myotis evotis, SC
Long-legged myotis, Myotis volans, SC
New Mexican jumping mouse, Zapus hudsonius luteus, SC
Occult little brown bat, Myotis lucifugus occultus, SC
Pale Townsend's (= western) big-eared bat, Plecotus townsendii pallescens, SC
Small-footed myotis, Myotis ciliolabrum, SC
Southwestern otter, Lutra canadensis sonorae, SC
Spotted bat, Euderma maculatum, SC
Yuma myotis, Myotis yumanensis, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Ferruginous hawk, Buteo regalis, SC
Harlequin duck, Histrionicus histrionicus, SC
Loggerhead shrike, Lanius ludovicianus, SC
Mexican spotted owl, Strix occidentalis lucida, T w/CH
Mountain plover, Charadrius montanus, C
Northern goshawk, Accipiter gentilis, SC
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
White-faced ibis, Plegadis chihi, SC
Whooping crane, Grus americana, E
Flathead chub, Platygobio (= Hybopsis) gracilis, SC
Cockerell's striate disc (snail), Discus shemeki cockerelli, SC
Sangre de Cristo peaclam, Pisidium sanguinichristi, SC
Arizona willow, Salix arizonica, SC
Ripley milk-vetch, Astragalus ripleyi, SC

Torrance

Arizona black-tailed prairie dog, Cynomys ludovicianus arizonensis, SC
Black-footed ferret, Mustela nigripes, E
Fringed myotis, Myotis thysanodes, SC
Long-legged myotis, Myotis volans, SC
Occult little brown bat, Myotis lucifugus occultus, SC
Spotted bat, Euderma maculatum, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Black tern, Chlidonias niger, SC
Ferruginous hawk, Buteo regalis, SC
Loggerhead shrike, Lanius ludovicianus, SC
Mexican spotted owl, Strix occidentalis lucida, T w/CH
Mountain plover, Charadrius montanus, C
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
Northern goshawk, Accipiter gentilis, SC
Texas horned lizard, Phrynosoma cornutum, SC

Union

Black-footed ferret, Mustela nigripes, E
Fringed myotis, Myotis thysanodes, SC
Long-legged myotis, Myotis volans, SC
Pale Townsend's (= western) big-eared bat, Plecotus townsendii pallescens, SC
Small-footed myotis, Myotis ciliolabrum, SC
Swift fox, Vulpes velox, C
Yuma myotis, Myotis yumanensis, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Ferruginous hawk, Buteo regalis, SC
Loggerhead shrike, Lanius ludovicianus, SC
Mountain plover, Charadrius montanus, C
Northern goshawk, Accipiter gentilis, SC
Western burrowing owl, Athene cunicularia hypugea, SC
White-faced ibis, Plegadis chihi, SC
Whooping crane, Grus americana, E
Arkansas River shiner, Notropis girardi, PE w/CH
Flathead chub, Platygobio (= Hybopsis) gracilis, SC
Plains minnow, Hybognathus placitus, SC
Texas horned lizard, Phrynosoma cornutum, SC
Dwarf milkweed, Asclepias uncialis var. uncialis, SC

Valencia

Arizona black-tailed prairie dog, Cynomys ludovicianus arizonensis, SC
Big free-tailed bat, Nyctinomops macrotis (= Tadarida m., T. molossa), SC
Black-footed ferret, Mustela nigripes, E
Fringed myotis, Myotis thysanodes, SC
Long-eared myotis, Myotis evotis, SC
Long-legged myotis, Myotis volans, SC
New Mexican jumping mouse, Zapus hudsonius luteus, SC
Occult little brown bat, Myotis lucifugus occultus, SC
Pecos River muskrat, Ondatra zibethicus ripensis, SC
Small-footed myotis, Myotis ciliolabrum, SC
Spotted bat, Euderma maculatum, SC
Yuma myotis, Myotis yumanensis, SC
American peregrine falcon, Falco peregrinus anatum, E
Arctic peregrine falcon, Falco peregrinus tundrius, T (S/A)
Baird's sparrow, Ammodramus bairdii, SC
Bald eagle, Haliaeetus leucocephalus, T
Ferruginous hawk, Buteo regalis, SC
Loggerhead shrike, Lanius ludovicianus, SC
Mexican spotted owl, Strix occidentalis lucida, T w/CH
Mountain plover, Charadrius montanus, C
Northern goshawk, Accipiter gentilis, SC
Southwestern willow flycatcher, Empidonax traillii extimus, E w/PCH
Western burrowing owl, Athene cunicularia hypugea, SC
White-faced ibis, Plegadis chihi, SC
Whooping crane, Grus americana, E
Flathead chub, Platygobio (= Hybopsis) gracilis, SC
Rio Grande silvery minnow, Hybognathus amarus, E w/PCH
Puzzle sunflower, Helianthus paradoxus, C

Index

E = Endangered
PE = Proposed Endangered
PE w/CH = Proposed Endangered with critical habitat
T = Threatened
PT = Proposed Threatened
PT w/CH = Proposed Threatened with critical habitat
PCH = Proposed critical habitat
C = Candidate Species
SC = Species of Concern
S/A = Similarity of Appearance
* = Introduced population

APPENDIX C3

SPECIAL STATUS SPECIES LIKELY TO OCCUR ON PUBLIC LAND

TABLE A - FEDERALLY LISTED, PROPOSED OR CANDIDATE SPECIES

TABLE B - BLM SENSITIVE, FWS SPECIES OF CONCERN & NM STATE LISTED SPECIES

TABLE A. Federally listed, proposed,and candidate species with status, presence, taxonomy, habitat, distribution, and biome information.

Species	Scientific Name	Status	Potentially Present On Public Land	Plant & Animal Class or Order	Habitat	Distribution	Biome
Chiricauhua Leopard Frog	Rana chiricahuensis	Candidate	X	Amphibian	Wetland/Riparian/ Aquatic		Aquatic/ Woodland
Lesser Long-Nosed Bat = Sanborns Longnosed Bat	Leptonycteris curasoae yerbabuenae	Endangered	X	Bat	Desert Scrub		Desert
Mexican Long Nosed Bat	Leptonycteris nivalis	Endangered	X	Bat	Desert Scrub		Desert
American Peregrine Falcon	Falco peregrinus anatum	Endangered	X	Bird	Mountain Cliffs - Wetland/Riparian/ Aquatic		Conif. Forest/ Woodland/ Grassland/ Desert/ Aquatic
Arctic Peregrine Falcon	Falco peregrinus tundrius	Threatened	X	Bird	General - Wetland/Riparian/ Aquatic		Conif. Forest/ Woodland/ Grassland/ Desert/ Aquatic
Bald Eagle	Haliaeetus leucocephalus	Threatened	X	Bird	Wetland/Riparian/ Aquatic in part		Aquatic/ Conif. Forest/ Woodland/ Grassland
Interior Least Tern	Sterna antillarum	Endangered	X	Bird	Wetland/Riparian/ Aquatic		Aquatic
Mexican Spotted Owl	Strix occidentalis lucida	Threatened w/CH	X	Bird	Mixed Conifer		Conif. Forest/ Woodland

Note - Table is split purposely to allow sorting for analysis....Table is to be sorted by columns 3 and 1 to place in Status and Species order then joined.

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Mountain Plover	Charadrius montanus	Candidate	X	Bird	Grasslands		Grassland
Northern Aplomado Falcon	Falco femoralis septentrionalis	Endangered	X	Bird	Desert Grassland		Grassland
Piping Plover	Charadrius melodus	Threatened	X	Bird	Wetland/Riparian/ Aquatic		Aquatic
Southwestern Willow Flycatcher	Empidonax traillii extimus	Endangered w/Proposed CH	X	Bird	Wetland/Riparian/ Aquatic		Woodland/Aquatic
Jaguar	Panthera onca	Proposed Endangered	X	Carnivore	Mountain Scrub/PJ Woodland-Wetland/Riparian/ Aquatic		Woodland/ Aquatic
Mexican Wolf	Canis lupus baileyi	Endangered	X	Carnivore	Mixed Conifer/PJ Woodland/Desert Grassland		Conif. Forest
Swift Fox	Vulpes velox	Candidate	X	Carnivore	Grasslands/ Scrub		Grassland/ Desert
Arkansas River Shiner	Notropis girardi	Proposed Endandered w/CH	X	Fish	Wetland/Riparian/ Aquatic		Aquatic
Beautiful Shiner	Cyprinella formosa	Threatened	X	Fish	Wetland/Riparian/ Aquatic		Aquatic
Colorado Squawfish	Ptychocheilus lucius	Endangered w/CH	X	Fish	Wetland/Riparian/ Aquatic		Aquatic
Loach Minnow	Rhinichthys cobitis	Threatened	X	Fish	Wetland/Riparian/ Aquatic		Aquatic
Pecos Bluntnose Shiner	Notropis simus pecosensis	Threatened w/CH	X	Fish	Wetland/Riparian/ Aquatic		Aquatic
Pecos Gambusia	Gambusia nobilis	Endangered	X	Fish	Wetland/Riparian/ Aquatic		Aquatic

Pecos Pupfish	Cyprinodon pecosensis	Candidate	X	Fish	Wetland/Riparian/ Aquatic		Aquatic
Razorback Sucker	Xyrauchen texanus	Endangered w/CH	X	Fish	Wetland/Riparian/ Aquatic		Aquatic
Rio Grande Silvery Minnow	Hybognathus amarus	Endangered w/Proposed CH	X	Fish	Wetland/Riparian/ Aquatic		Aquatic
Spikedace	Meda fulgida	Threatened	X	Fish	Wetland/Riparian/ Aquatic		Aquatic
Koster's Tryonia	Tryonia kosteri	Candidate	X	Gastropod	Wetland/Riparian/ Aquatic	Endemic	Aquatic
Pecos Assiminea	Assiminea pecos	Candidate	X	Gastropod	Wetland/Riparian/ Aquatic	Endemic	Aquatic
Roswell Springsnail (Pyrg)	Fontelicella roswellensis = Pyrgulopsis roswellensis	Candidate	X	Gastropod	Wetland/Riparian/ Aquatic	Endemic	Aquatic
Gypsum Wild Buckwheat	Eriogonum gypsophilum	Threatened w/CH	X	Plant	Desert Scrub	Endemic	Desert
Knowltons Catctus	Pediocactus knowltonii	Endangered	X	Plant	Desert Scrub	Endemic	Desert
Kuenzlers Hedgehog Cactus	Echinocereus fendleri var. Kuenzleri	Endangered	X	Plant	PJ Woodland		Woodland
Lloyds Hedgehog Cactus	Echinocereus lloydii	Endangered	X	Plant	Desert Scrub		Desert
Manco Milkvetch	Astragalus humillimus	Endangered	X	Plant	Desert Scrub	Endemic	Desert
Mesa Verde Cactus	Sclerocactus mesae-verdae	Threatened	X	Plant	Great Basin Desert Scrub	Endemic	Desert
Parishs Alkali Grass	Puccinellia parishii	Proposed Endangered	X	Plant	Wetland/Riparian/ Aquatic		Desert+ Aquatic Emergent

Puzzle Sunflower	Helianthus paradoxus	Candidate	X	Plant	Wetland/Riparian/ Aquatic		Aquatic Emergent0
Sacramento Prickly Poppy	Argemone pleiacantha ssp.pinnatisecta	Endangered	X	Plant	Desert Scrub/Desert Grassland/ Arroyo	Endoemic	Woodland/ Desert
Sneeds Pincushion Cactus	Coryphantha sneedii var. sneedii	Endangered	X	Plant	Desert Scrub	Endemic	Desert
Todsens Pennyroyal	Hedeoma todsenii	Endangered w/CH	X	Plant	PJ Woodland	Endemic	Woodland
Zuni Fleabane	Erigeron rhizomatus	Threatened	X	Plant	PJ Woodland	Endemic	Woodland

Table B. BLM Sensitive, FWS Species of Concern, and State Listed Species for New Mexico with status, presence, taxonomy, habitat, and distribution information.

Common Name	Scientific Name	Status	Potentially Present On Public Land	Plant & Animal Class or Order	Habitat	Distribution	Biome
Crested Coral Root	Hexalectris spicata	SE	X	Plant	Madrean Evergreen Woodland		Woodland
Arizona southwestern toad	Bufo microscaphus microscaphus	BLM Sensitive	X	Amphibian	Wetland/Riparian/Aquatic		Aquatic
Colorado River Toad	Bufo alvarius	SEII	X	Amphibian	Chihuahuan Desert Scrub	Bootheel	Desert
Great Plains Narrowmouth Toad	Gastrophryne olivacea	SEI	X	Amphibian	Chihuahuan Desert Grassland		Grassland
Jemez Mountain salamander	Plethodon neomexicanus	BLM Sensitive	X	Amphibian	Mixed Conifer		Conif. Forest
Lowland leopard frog	Rana yavapaiensis	BLM Sensitive	X	Amphibian	Wetland/Riparian/Aquatic	Bootheel	Aquatic/ Woodland
Spotted Chrous Frog	Pseudacris clarkii	SEI	X	Amphibian	Plains Grassland/ Wetland/Riparian/ Aquatic		Grassland/ Aquatic
Allen's (Mexican) big-eared bat	Idionycteris (=Plecotus) phyllotis	BLM Sensitive	X	Bat	Mixed Conifer/PJ Woodland/Riparian		Conif. Forest/ Woodland
Big Free-tailed Bat	Nyctinomops macrotis	BLM Sensitive	X	Bat	Mixed Conifer/PJ Woodland/ Wetland/Riparian/Aquatic		Conif. Forest/ Woodland

Note - Table is split purposely to allow sorting for analysis....Table is to be sorted by columns 3 and 1 to place in Status and Species order then joined.

California leaf-nosed bat	Macrotus californicus	BLM Sensitive	X	Bat	Chihuahuan Desert Scrub/Great Basin Desert Scrub	Bootheel	Desert
Cave myotis	Myotis velifer	BLM Sensitive	X	Bat	Chihuahuan Desert Grasslands/Great Plains Grasslands/ Chihuahuan Desert Scrub Wetland/Riparian/ Aquatic		Desert/ Grassland/ Woodland/ Aquatic
Fringed myotis	Myotis thysanodes	BLM Sensitive	X	Bat	Great Plains Grassland/Chihuahuan Desert Grassland/Great BasinDesert Scub/pj Woodland/Mixed Conifer/Madrean Evergreen Woodland/Riparian		Grassland/ Desert/ Woodland
Greater western mastiff bat	Eumops perotis californicus	BLM Sensitive	X	Bat	Madrean Evergreen Woodland	Bootheel	Woodland
Long-eared myotis	Myotis evotis	BLM Sensitive	X	Bat	Mixed Conifer/PJ Woodland/Riparian		Conif. Forest/ Woodland
Long-legged myotis	Myotis volans	BLM Sensitive	X	Bat	Mixed Conifer/PJ Woodland/Riparian		Conif. Forest/ Woodland
Mexican long-tongued bat	Choeronycteris mexicana	BLM Sensitive	X	Bat	PJ Woodland/Chihuahuan Desert Scrub/Interior Chaparral	Bootheel	Woodland/ Desert
Occult little brown bat	Myotis lucifugus occultus	BLM Sensitive	X	Bat	Mixed Conifer/PJ Woodland/Riparian		Conif. Forest/ Woodland

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Pale Townsend's big-eared bat	Plecotus townsendii pallescens	BLM Sensitive	X	Bat	Mixed Conifer/PJ Woodland/Madrean Evergreen Woodland/Great Plains Grassland/Chihuahuan Desert Grassland/Great Basin Desert Scrub/Riparian		Conif. Forest/ Woodland/ Grassland/ Desert
Small-footed myotis	Myotis ciliolabrum	BLM Sensitive	X	Bat	Mixed Conifer/PJ Woodland/Great Plains Grassland/Chihuahuan Desert Grassland		Conif. Forest/ Woodland/ Grassland
Spotted bat	Euderma maculatum	BLM Sensitive	X	Bat	Mixed Conifer/PJ Woodland/Chihuahuan Desert Scrub/Chihuahuan Desert Grassland/Riparian		Conif. Forest/ Woodland/ Desert/ Grassland
Western Yellow Bat	Lasiurus xanthinus	SEII	X	Bat	Wetland/Riparian/ Aquatic	Bootheel	Woodland/Aquatic
Yuma myotis	Myotis yumanensis	BLM Sensitive	X	Bat	Great Plains Grassland/Chihuahuan Desert Grassland/Mixed Conifer/PJ Woodland/Great Basin Desert Scrub		Grassland/ Conif Forest/ Woodland/ Desert
Abert's Towhee	Pipilo aberti	SEII	X	Bird	Mixed Conifer/Madrean Evergreen Woodland/ Wetland/Riparian/ Aquatic		Conif. Forest/ Woodland/ Aquatic

Arizona Grasshopper Sparrow	Ammodramus savannarum ammolegus	SEII	X	Bird	Chihuahuan Desert Grassland/Chihuahuan Desert Scrub	Bootheel	Desert/Grassland
Baird's sparrow	Ammodramus bairdii	BLM Sensitive	X	Bird	Chihuahuan Desert Grassland/Great Plains Grassland		Grassland/ Desert
Bell's Vireo	Vireo bellii	SEII	X	Bird	Wetland/Riparian/ Aquatic		Woodland/Aquatic
Black tern	Chlidonias niger	BLM Sensitive	X	Bird	Wetland/Riparian/Aquatic		Aquatic
Boreal Owl	Aegolius funereus	SEII	X	Bird	Mixed Conifer		Forest
Broad-billed Hummingbird	Cynanthus latirostris	SE II	X	Bird	Wetland/Riparian/ Aquatic	Bootheel	Woodland/Aquatic
Buff-collared Nightjar	Caprimulgus ridgwayi	SEI	X	Bird	Chihuahuan Desert Scrub	Bootheel	Desert
Common Ground Dove	Columbina passerina	SEI	X	Bird	Chihuahuan Desert Scrub/ Chihuahuan Desert Grassland/ Wetland/Riparian/ Aquatic		Desert/ Grassland/ Woodland/Aquatic
Common Black-hawk	Buteogallus anthracinus anthracinus	SEII	X	Bird	Wetland/Riparian/ Aquatic		Woodland/ Aquatic
Costa's Hummingbird	Calypte cosae	SEII	X	Bird	Madrean Evergreen Woodland	Bootheel	Woodland
Elegant Trogon	Trogon elegans	SEII	X	Bird	Mixed Conifer/Madrean Evergreen Woodland/ Wetland/Riparian/ Aquatic	Bootheel	Conif. Forest/ Woodland/ Aquatic

Ferruginous ha[illegible]	Buteo regalis	BLM Sensitive	X	Bird	Great Plains Grassland/Great Basin Grassland/Great Basin Desert Scrub/Chihuahuan Desert Grassland/Chiuhuahuan Desert Scrub/ PJ Woodland		Grassland/ Desert/ Woodland
Fulvous whistling duck	Dendrocygna bicolor	BLM Sensitive	X	Bird	Wetland/Riparian/Aquatic		Aquatic
Gila Woodpecker	Melanerpes uropygialis	SEII	X	Bird	Wetland/Riparian/ Aquatic		Woodland/Aquatic
Gould's Wild Turkey	Meleagris gallopavo mexicana	SEII	X	Bird	Mixed Conifer/Madrean Evergreen Woodland/PJ Woodland	Bootheel	Forest/Woodland
Gray Vireo	Vireo vicinior	SEII	X	Bird	PJ Woodland/Mt Scrub/Interior Chaparral		Woodland
Harlequin duck	Histrionicus histrionicus	BLM Sensitive	X	Bird	Wetland/Riparian/Aquatic		Aquatic
Lessert Prairie Chicken	Tympanuchus pallidicinctus	BLM Sensitive	X	Bird	Great Plains Grassland/Plains Sand Scrub		Grassland/ Woodland-Brushland
Loggerhead shrike	Lanius ludovicianus	BLM Sensitive	X	Bird	Great Basin Desert Scrub/Chiuahuan Desert Scrub/Great Plains Grassland/Riparian		Desert/ Grassland/ Woodland
Lucifer Hummingbird	Calothorax lucifer	SEII	X	Bird	Chihuahuan Desert Scrub/Madrean Evergreen Woodland		Desert/ Woodland

Neotropic Cormorant	Phalacrocorax basilianus	SEII	X	Bird	Wetland/Riparian/ Aquatic		Aquatic
Northern goshawk	Accipiter gentilis	BLM Sensitive	X	Bird	Mixed Conifer/Riparian		Conif. Forest/ Woodland
Northern gray hawk	Buteo nitidus maximus	BLM Sensitive	X	Bird	Chihuahuan Desert Grassland/Riparian	Bootheel	Grassland/ Woodland
Northern Beardless-tyrannulet	Camptostoma imberbe	SEI	X	Bird	Wetland/Riparian/ Aquatic	Bootheel	Woodland/ Aquatic
Thick-billed Kingbird	Tyrannus crassirostris	SEI	X	Bird	Wetland/Riparian/ Aquatic	Bootheel	Woodland/Aquatic
Varied Bunting	Passerina vesicolor	SEII	X	Bird	Chihuahuan Desert Scrub/ Wetland/Riparian/ Aquatic		Desert/ Woodland/Aquatic
Violet-Crowned Hummingbird	Amazilia violiceps	SEII	X	Bird	Wetland/Riparian/ Aquatic	Bootheel	Woodland/Aquatic
Western burrowing owl	Athene cunicularia hypugea	BLM Sensitive	X	Bird	Great Plains Grassland/Chihuahuan Desert Grasslands/Chihuahuan Desert Scrub/Great Basin Desert Scrub/ PJ Woodland/Montane Grassland	Often Associated with Prairie Dog Towns	Grassland/ Desert/ Woodland
White-faced ibis	Plegadis chihi	BLM Sensitive	X	Bird	Wetland/Riparian/Aquatic		Aquatic
White-eared Hummingbird	Hylocharis leucotis	SEII	X	Bird	Madrean Evergreen Woodland/ Wetland/Riparian/ Aquatic/ Mixed Conifer	Bootheel	Woodland/Aquatic/ Forest

Yellow-Eyed Junco	Junco phaeonotus	SEII	X	Bird	Mixed Conifer/PJ Woodland/Mtn Scrub/Madrean Evergreen Woodland		Forest/ Woodland
Sangre de Cristo peaclam	Pisidium sanguinichristi	BLM Sensitive	X	Bivalve	Wetland/Riparian/Aquatic	Endemic	Aquatic
Southwestern otter	Lutra canadensis sonorae	BLM Sensitive	X	Carnivore	Wetland/Riparian/Aquatic		Aquatic
Noel's amphipod	Gammarus desperatus	BLM Sensitive	X	Crustacean	Wetland/Riparian/Aquatic	Endemic	Aquatic
Millipede (no common name)	Toltecus chihuanus	BLM Sensitive	X	Diplopod	Unknown	Bernalillo Co.	Unknown
Bigscale Logperch	Percina macrolepida	SEI	X	Fish	Wetland/Riparian/ Aquatic		Aquatic
Blue sucker	Cycleptus elongatus	BLM Sensitive	X	Fish	Wetland/Riparian/Aquatic		Aquatic
Desert sucker	Catostomus clarki	BLM Sensitive	X	Fish	Wetland/Riparian/Aquatic		Aquatic
Flathead chub	Platygobio (=Hybopsis) gracilis	BLM Sensitive	X	Fish	Wetland/Riparian/Aquatic		Aquatic
Gila chub	Gila intermedia	BLM Sensitive	X	Fish	Wetland/Riparian/Aquatic		Aquatic
Gray Redhorse	Moxostoma congestum	SEII	X	Fish	Wetland/Riparian/ Aquatic		Aquatic
Greenthroat Darter	Etheostoma lepidum	SEII	X	Fish	Wetland/Riparian/ Aquatic		Aquatic
Longfin dace	Agosia chrysogaster	BLM Sensitive	X	Fish	Wetland/Riparian/Aquatic		Aquatic
Mexican Tetra	Astyanax mexicanus	SEII	X	Fish	Wetland/Riparian/ Aquatic		Aquatic
Plains minnow	Hybognathus placitus*	BLM Sensitive	X	Fish	Wetland/Riparian/Aquatic		Aquatic

Rio Grande shiner	Notropis jemezanus	BLM Sensitive	X	Fish	Wetland/Riparian/Aquatic		Aquatic
Roundtail chub	Gila robusta	BLM Sensitive	X	Fish	Wetland/Riparian/Aquatic		Aquatic
Sonora sucker	Catostomus insignis	BLM Sensitive	X	Fish	Wetland/Riparian/Aquatic		Aquatic
Speckled dace	Rhinichthys osculus (Gila drainage)	BLM Sensitive	X	Fish	Wetland/Riparian/Aquatic		Aquatic
Zuni bluehead sucker	Catostomus discobolus yarrowi	BLM Sensitive	X	Fish	Wetland/Riparian/Aquatic	Endemic	Aquatic
Cockerell's striate disc (snail)	Discus shemeki cockerelli	BLM Sensitive	X	Gastropod	Mixed Conifer		Conif. Forest/Aquatic
Cook's Peak woodlandsnail	Ashmunella macromphala	BLM Sensitive	X	Gastropod	Unknown	Endemic	Woodland?
Cornudas Mtns Land Snail	Ashmunella amblya cornudasensis	BLM Sensitive	X	Gastropod	Montane Scrub	Endemic	Woodland
Dona Ana talussnail	Sonorella todseni	BLM Sensitive	X	Gastropod	Interior Chaparral	Endemic	Woodland
Hacheta Grande woodlandsnail	Ashmunella hebardi	BLM Sensitive	X	Gastropod	PJ Woodland	Endemic/Bootheel	Woodland
Pecos springsnail (Pyrg)	Fontelicella pecosensis = Pyrgulopsis pecosensis	BLM Sensitive	X	Gastropod	Wetland/Riparian/Aquatic		Aquatic
Animas minute moss beetle	Limnebius aridus	BLM Sensitive	X	Insect	Unknown	Bootheel	Woodland?
Anthony blister beetle	Lytta mirifica	BLM Sensitive	X	Insect	Unknown		Desert?
Arizona shrew	Sorex arizonae	BLM Sensitive	X	Insectivore	Mixed Conifer/Madrean Evergreen Woodland		Conif. Forest/ Woodland
Least Shrew	Cryptotis parva	SEII	X	Insectivore	Wetland/Riparian/ Aquatic		Woodland/Grassland/Aquatic

Acoma fleabane	Erigeron acomanus	BLM Sensitive	X	Plant	PJ Woodland		Woodland
Alamo beardtongue	Penstemon alamosensis	BLM Sensitive	X	Plant	Chihuahuan Desert Scrub, Chihuahuan Desert Grassland	Endemic	Desert/ Grassland
Aztec gilia	Gilia formosa	BLM Sensitive	X	Plant	Great Basin Desert Scrub		Desert
Bisti fleabane	Erigeron bistiensis	BLM Sensitive	X	Plant	Great Basin Desert Scrub	Endemic	Desert
Brack's Cactus	Sclerocactus cloveriae subsp. brackii	SE	X	Plant	PJ Woodland/ Great Basin Desert Scrub		Woodland/ Desert
Chiricahua mudwort	Limosella pubiflora	BLM Sensitive	X	Plant	Wetland/Riparian/Aquatic		Aquatic
Cinder phacelia	Phacelia serrata	BLM Sensitive	X	Plant	PJ Woodland/Mixed Conifer Forest	substrate Specialist	Conif. Forest/ Woodland
Contra yerba	Pediomelum pentaphyllum	BLM Sensitive	X	Plant	Chihuahuan Desert Grassland	Bootheel	Grassland
Desert night-blooming cereus	Cereus greggii var. greggii	BLM Sensitive	X	Plant	Chihuahuan Desert Scrub		Desert
Duncan's cory cactus	Coryphantha duncanii	BLM Sensitive	X	Plant	Chihuhuahuan Desert Scrub	Restricted, substrate specialist	Desert
Duncans Pincushion Cactus	Escobaria duncanii	SE/ BLM Sensitive	X	Plant	Chihuahuan Desert Scrub		Desert
Dwarf milkweed	Asclepias uncialis var. uncialis	BLM Sensitive	X	Plant	Great Plains Grassland/Great Basin Grassland		Grassland
Fugate's blue-star	Amsonia fugatei	BLM Sensitive	X	Plant	Chihuahuan Desert Scrub		Desert

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Glass Mountain coral-root = Shining Coral Root	Hexalectris nitida	BLM Sensitive	X	Plant	Madrean Evergreen Woodland		Woodland
Grama grass cactus	Pediocactus papyracanthus	BLM Sensitive	X	Plant	Chihuahuan Desert Grassland/PJ Woodland/GreatBasin Desert Grassland/Short Grass Steppe		Grassland/ Woodland-Scrubland/ Desert
Griffith's saltbush	Atriplex griffithsii	BLM Sensitive	X	Plant	Chihuahuan Desert Scrub		Desert
Guadalupe smooth aster	Aster laevis var. guadalupensis	BLM Sensitive	X	Plant	Madrean Evergreen Woodland/Riparian		Woodland
Gypsum scalebroom	Lepidospartum burgessii	BLM Sensitive	X	Plant	Chihuahuan Desert Scrub	Endemic	Desert
Gypsum hotspring aster	Machaeranthera gypsitherma	BLM Sensitive	X	Plant	Wetland/Riparian/Aquatic		Aquatic Emergent
Gypsum townsendia	Townsendia gypsophila	BLM Sensitive	X	Plant	PJ Woodland/Great Basin Desert Scrub	Endemic?	Woodland/ Desert
Knight's milk-vetch	Astragalus knightii	BLM Sensitive	X	Plant	PJ Woodland		Woodland
Limestone rosewood	Vauquelinia californica ssp. pauciflora	BLM Sensitive	X	Plant	Interior Chaparral	Bootheel	Woodland
Nodding rock-daisy	Perityle cernua	BLM Sensitive	X	Plant	Mountain Scrub		Woodland
Organ Mtn. Pincushion Cactus	Escobaria organensis	SE	X	Plant	PJ Woodland/Interior Chaparral		Woodland
Organ Mountain evening-primrose	Oenothera organensis	BLM Sensitive	X	Plant	Wetland/Riparian/Aquatic		Aquatic/ Emergent
Organ Mountain figwort	Scrophularia laevis	BLM Sensitive	X	Plant	Mixed Conifer/PJ Woodland	Endemic	Conif. Forest/ Woodland

Pinos Altos fameflower	Talinum humile	BLM Sensitive	X	Plant	PJ Woodland/Interior Chaparral		Woodland
Ripley milk-vetch	Astragalus ripleyi	BLM Sensitive	X	Plant	PJ Woodland/Mixed Conifer/Montane Scrub		Conif. Forest/ Woodland
Sand prickly pear	Opuntia arenaria	BLM Sensitive	X	Plant	Chihuahuan Desert Grassland	substrate specialist	Grassland
Sandhill goosefoot	Chenopodium cycloides	BLM Sensitive	X	Plant	Plains-Mesa Broadleaf Sand Scrub		Desert-Woodland-Grassland
Santa Fe cholla	Opuntia viridiflora	BLM Sensitive	X	Plant	PJ Woodland		Woodland
Scheer's Pincushion Cactus	Coryphantha Scheeri var. scheeri	SE	X	Plant	Chihuahuan Desert Scrub		Desert
Scheer's Pincushion Cactus	Coryphantha Scheeri var. scheeri	SE	X	Plant	Chihuahuan Desert Scrub, Chihuahuan Desert Grassland		Desert/ Grassland
Sivinski's fleabane	Erigeron sivinskii	BLM Sensitive	X	Plant	PJ Woodland	Endemic	Woodland
Slender spiderflower	Cleome multicaulis	BLM Sensitive	X	Plant	Wetland/Riparian/Aquatic-Chihuahuan Desert Lowland Swale Grassland		Aquatic Emergent/ Grassland
Spellenberg's groundsel	Senecio spellenbergii	BLM Sensitive	X	Plant	Great Plains Grassland		Grassland
Tharp's blue-star	Amsonia tharpii	BLM Sensitive	X	Plant	Chihuahuan Desert Scrub		Desert
Villard's pincushion cactus	Escobaria villardii	BLM Sensitive	X	Plant	Chihuahuan Desert Grassland	Endemic	Grassland
Wilcox Pincushion Cactus	Mammillaria wrightii var wilcoxii	SE	X	Plant	Chihuahuan Desert Grassland		Grassland

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Wright's water-willow	Justicia wrightii	BLM Sensitive	X	Plant	Chihuahuan Desert Scrub	Restricted?	Desert
White-sided jackrabbit	Lepus callotis gaillardi	BLM Sensitive	X	Rabbit	Chihuahuan Desert Grassland/Chihuahuan Desert Scrub	Bootheel	Desert/ Grassland
Arid Land Ribbon Snake = Western Ribbon Snake	Thamnophis proximus	SEII	X	Reptile	Wetland/Riparian/ Aquatic		Aquatic
Blotched Water Snake = Plain Bellied Water Snake	Nerodia erythrogaster	SEI	X	Reptile	Wetland/Riparian/ Aquatic		Aquatic
Canyon (giant) spotted whiptail	Cnemidophorus burti	BLM Sensitive	X	Reptile	Madrean Evergreen Woodland/Riparian	Bootheel	Woodland
Dunes sagebrush lizard	Sceloporus arenicolus	BLM Sensitive	X	Reptile	Plains&Mesa Sandscrub	substrate specialist	Woodland-Brushland
Gray-checkered whiptail	Cnemidophorus dixoni	BLM Sensitive	X	Reptile	Chihuahuan Desert Grassland/Chihuahuan Desert Scrub	Bootheel	Desert
Mexican garter snake	Thamnophis eques	BLM Sensitive	X	Reptile	Wetland/Riparian/Aquatic		Aquatic/ Woodland
Mottled Rock Rattlesnake	Crotalus lepidus lepidus	SEII	X	Reptile	PJ Woodland/Mtn Scrub		Woodland
Narrowhead garter snake	Thamnophis rufipunctatus	BLM Sensitive	X	Reptile	Wetland/Riparian/Aquatic		Aquatic/ Woodland
Reticulate Gila Monster	Heloderma suspectum suspectum	SEI	X	Reptile	Chihuahuan Desert Scrub		Desert
Texas horned lizard	Phrynosoma cornutum	BLM Sensitive	X	Reptile	Great Plains Grassland/Chihuahuan Desert Scrub/Chihuahuan Desert Grassland/PJ Woodland/		Grassland/ Desert/ Woodland
Western River Cooter	Pseudemys gorzugi	SEII	X	Reptile	Aquatic		Aquatic

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Arizona black-tailed prairie dog	Cynomys ludovicianus arizonensis	BLM Sensitive	X	Rodent	Chihuahuan Dessert Grassland/Great Plains Grassland		Grassland
Cebolleta southern pocket gopher	Thomomys umbrinus paquatae	BLM Sensitive	X	Rodent	PJ Woodland/Great Basin Desert Scrub		Woodland/ Desert
Desert pocket gopher	Geomys bursarius arenarius	BLM Sensitive	X	Rodent	Chihuahuan Desert Grassland/Chihuahuan Desert Scrub		Desert
Goat Peak pika	Ochotona princeps nigrescens	BLM Sensitive	X	Rodent	Rock Outcrop in Mixed Conifer		Conif. Forest
Gray-footed chipmunk	Tamias canipes	BLM Sensitive	X	Rodent	Mixed Conifer/PJ Woodland		Conif. Forest/ Woodland
Guadalupe southern pocket gopher	Thomomys umbrinus guadalupensis	BLM Sensitive	X	Rodent	PJ Woodland/Madrean Evergreen Woodland		Woodland
Mearns' southern pocket gopher	Thomomys umbrinus mearnsi	BLM Sensitive	X	Rodent	PJ Woodland/Chihuahuan Desert Grassland	Bootheel	Woodland/ Grassland
New Mexican jumping mouse	Zapus hudsonius luteus	BLM Sensitive	X	Rodent	Wetland/Riparian/Aquatic		Aquatic/ Woodland
Organ Mountains Colorado chipmunk	Tamias quadrivittatus australis	BLM Sensitive	X	Rodent	Mixed Conifer/PJ Woodland/Madrean Evergreen Woodland	Endemic	Conif. Forest/ Woodland
Pecos River muskrat	Ondatra zibethicus ripensis	BLM Sensitive	X	Rodent	Wetland/Riparian/Aquatic		Aquatic
Southern Pocket Gopher	Thomomys umbrinus emotus	SEII	X	Rodent	PJ Woodland/Madrean Evergreen Woodland/Mixed Conifer	Bootheel/Endemic	Forest/Woodland

White Sands woodrat	Neotoma micropus leucophaea	BLM Sensitive	X	Rodent	Chihuahuan Desert Grassland/ Chihuahuan Desert Scrub	Restricted	Grassland/ Desert
Yellow-nosed cotton rat	Sigmodon ochrognathus	BLM Sensitive	X	Rodent	Montane Scrub/PJ Woodland/Madrean Evergreen Woodland&Forest/ Chihuahuan Desert Grassland	Bootheel	Woodland/ Grassland
Desert Bighorn Sheep	Ovis canadensis mexicana	SEI	X	Ungulate	PJ Woodland/Chihuahuan Desert Scrub/Mtn Scrub/Interior Chaparral		Woodland/Desert

Note - Table is split purposely to allow sorting for analysis....Table is to be sorted by columns 3 and 1 to place in Status and Species order then joined.

Codes:
BLM Sensitive = Species designated by BLM as sensistive. By policy these include FWS species of concern occurring on Public Land.
SOC = Species of Concern (Former Category 2 Candidates)
SE = State Endangered Plants
SEI = State Endangered Animals Group 1 (Endangered)
SEII = State Endangered Animals Group 2 (Threatened)
X = Potentially Present on BLM Lands

Aug. 10, 1998

APPENDIX D
FINANCIAL THRESHOLD ANALYSIS

FINANCIAL THRESHOLD ANALYSIS OF THE IMPACTS OF THE PROPOSED BLM STANDARDS & GUIDELINES FOR GRAZING

PURPOSE

The purpose of this report is to determine the current financial conditions of BLM dependent ranches that may be affected by impacts of the proposed BLM Standards and Guidelines for Grazing, Chapter 3 of the Environmental Impact Statement (EIS), Affected Environment. These conditions are then used as a baseline for comparison of the impacts of the three proposed alternatives in Chapter 4 of the EIS, Environmental Consequences.

METHODOLOGY

The analysis in this report is based on:

- Tables and other information describing typical ranches by size and class in the five ranching areas in New Mexico, as published in the annual report, Range Livestock Cost and Return Estimates for New Mexico, by L. Allen Torell and Jerry M. Hawkes, of the Agricultural Experiment Station at New Mexico State University,
- Ten-year average budgets of typical ranches by size and class in the five ranching areas in New Mexico as developed specifically for this EIS, by John Fowler, Ph.D., and Nick Ashcroft of New Mexico State University, and
- Tables of cost and revenues changes for each typical ranch by size and class in the five ranching areas in New Mexico, as affected by each of the alternatives, as developed specifically for this EIS, by John Fowler, Ph.D., and Nick Ashcroft of New Mexico State University.

Using the above sources of information, each typical ranch was analyzed to determine in the Affected Environment:

- Percentage of dependency on BLM grazing, and other lands, and
- Financial thresholds for production, overhead and owner salary in terms of AUMs.

And in Environmental Consequences:

- Impacts on financial thresholds by each of the three alternatives (plus the No-Action alternative), as well as both a 20 percent reduction in BLM AUMs under each of the alternatives, and the cost to the rancher of paying the cost of required improvements under each of the alternatives; and
- Affects on current standards of living under each of the alternatives.

ASSUMPTIONS

- Rate of revenue/AUM was held constant at all levels of production prior to management changes.
- Variable cost functions for varying levels of production prior to management changes varied with changes in the number of AUMs, and changes in the amount of land grazed. As a result, the slope of the variable cost function (and subsequently the total cost function) was different for each type of grazing land, with abrupt increases/decreases at the points where they intersected.
- None of the non-BLM grazing lands have had, or will have, management changes that will affect

production.

- BLM AUMs are the marginal units (last ones produced) for these typical ranches.

DEFINITION OF TERMS:

Variable Production Costs: These are expenses that vary with production levels, and consist of leases, grazing fees, supplemental feed, livestock expenses, hired labor, and other miscellaneous ranch expenses. The cost driver for some of the expenses is the actual number of AUMs (livestock) in production (i.e. grazing fees, feed, per head taxes, etc.). The cost driver for some of the other expenses (i.e. fuel and repairs, maintenance, etc.) is the amount and type of land being used for production and the costs associated with that land independent of the number of AUMs at any given time period. For this reason, some costs decrease/increase directly with the number of AUMs, others decrease/increase directly with the amount and type of land being used.

Fixed or Overhead Costs: These are expenses that do not vary with the level of production. They include electricity, telephone, butane, oil, gas and wood products for heating, insurance, depreciation, and taxes on land, dwellings, and equipment. These costs must be paid even if production is reduced to zero.

Total Costs: These are the sum of Variable Production Costs and Fixed Overhead Costs (for Small and Extra-Small ranches), and include Owner's Salary (for Medium, Large, and Extra-Large ranches).

Gross Revenues: These are derived from the sales of livestock and/or feed program payments.

Gross Margin: This is the amount of gross revenues (ranch income) remaining after all variable production costs have been paid. In order for a business to remain in operation, this number must be positive.

Owner Salary: This is the value of the owner's management and labor for the given typical ranch. It varies by size and ranching area.

Financial Threshold for Production (FTPd): This is the minimum number of AUMs required for the given typical ranch to meet all variable production costs. It is determined by graphing the gross revenue and variable production cost functions to locate the initial point of intersection.

Financial Threshold for Profitability (FTPf): This is the minimum number of AUMs required for the given typical ranch to meet all variable production costs plus all fixed overhead costs. For extra-small and small ranches, this does not include much, if any, owner salary, as most ranches in these size classes are dependent on significant off-ranch family income, either part-time or full-time. For medium, large and extra-large ranches, dependency on off-ranch income to pay the owner's salary is less likely due to the increased amount of time required by the owner to manage ranches of these sizes. Therefore, the amount of the owner's salary is not included in the FTPf for extra-small and small ranches, but is included in the FTPf for medium, large and extra-large ranches. This threshold is determined by either of the following methods: 1) graphing the gross revenue and total cost functions to locate the point(s) of intersection, or 2) using the following formulae at different levels of production:

Gross revenue/AUM
Variable Production Costs/AUM = Gross margin/AUM

Total Fixed Overhead Costs[1]
Gross Margin/AUM = Financial Threshold for Profitability in AUMs

BLM permit: A permit for grazing on federal land issued by the Bureau of Land Management, for a given number of AUMs on a given allotment, paid for by a determined amount per AUM for the actual number of AUMs grazed.

USFS permit: A permit for grazing on federal land issued by the United States Forest Service, for a given

number of AUMs on a given allotment, paid for by a determined amount per AUM for the actual number of AUMs grazed.

State Lease: A permit for grazing on New Mexico State Trust Land issued by the New Mexico State Land Office, on a given allotment for a given number of acres. Payment is based on the amount of an accepted bid by the permitee for the allotment, and is independent of the actual number of AUMs grazed.

Maximum production capacity: An estimated maximum number of AUMs based on the maximum herd size for the given size and type of ranch and its current available resources. Operation beyond this point would require shifting to the next higher size classification, and a change in all revenue and cost functions.

New Mexico Ranching Areas: The analysis for this report includes five ranching areas in New Mexico. These areas were determined by the sources of information described previously. The following is a summary of the typical ranches for each area.

I. AFFECTED ENVIRONMENT

A. Central Mountain Region

1. Extra-Small Cow/Calf Ranch

The typical ranch in this category has 53 head of livestock, 40 of which are brood cows, for a total of 636 AUMs. Approximately 27 percent of the ranch grazing is a BLM permit, most of the remainder is a USFS permit. At this level of production, the revenues from ranching pay all of the variable production costs and about one-half of the fixed overhead costs. The remainder of the fixed overhead costs, approximately $6,300 is paid for by off-ranch income.

Based on the ten-year-average budget for this typical ranch, the FTPd is approximately 250 AUMs, well within the production capacity of the ranch. The FTPf is approximately 1430 AUMs, well beyond the potential maximum production capacity of the ranch (assuming a maximum capacity of 900 to 950 AUMs).

This ranch can never hope to pay all of its fixed overhead costs or any of its owner salary costs from ranching revenues, without expanding to a larger ranch size. But, as long as it does pay a portion of fixed overhead costs, it is financially better off to remain in operation. Its most profitable level is at or above current production levels.

2. Small Cow/Calf Ranch

This typical ranch has 133 head of livestock, 100 of which are brood cows, for a total of 1596 AUMs. Approximately 12 percent of the ranch grazing is a BLM permit, most of the remainder is a USFS permit. At this level of production, the revenues from ranching pay all of the variable production costs, and all of the fixed overhead costs, with a residual profit of $420 towards the owner's salary or other family needs.

Based on the ten-year-average budget, the FTPd is approximately 510 AUMs, well within the production capacity of the ranch. The FTPf is achieved at approximately 1550 AUMs, which is well within the potential maximum production capacity of the ranch (assuming a maximum capacity of between 1600 and 1700 AUMs).

This ranch can never hope to pay its owner a full salary without expanding to a larger ranch size. But as long as it does pay at least a portion of the fixed overhead costs, it is financially better off remaining in production, as these costs must be paid even if production is zero. Its most profitable levels are at or above current levels of production.

3. Medium Cow/Calf Ranch

This typical ranch has 284 head of livestock, 225 of which are brood cows, for a total of 3408 AUMs. Approximately 21 percent of the ranch grazing is a BLM permit, 16 percent is a USFS permit, 13 percent is a State lease, and the remaining 50 percent is private grazing. At this level of production, the revenues from ranching pay

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all of the variable production costs, all of the fixed overhead costs, all of the owner's salary, and has a residual profit of approximately $4,100.

Based on the ten-year-average budget, the FTPd is approximately 375 AUMs, well within the production capacity of the ranch. The FTPf is achieved at around 3100 AUMs, which is well within the potential maximum production capacity of the ranch (assuming a maximum production capacity of 4500 to 4650 AUMs), but occurs only with the inclusion of the BLM permit. At lower levels of production that exclude the BLM grazing, all variable production costs can be covered, but there is a decreasing ability to pay the owner's salary, and in some cases, none of the owner's salary is paid. At levels below 1875 AUMs, the ranch is no longer paying all fixed overhead costs (exclusive of the owner's salary). This is significant, in that a medium-sized ranch requires the full-time attention of the owner, with little or no opportunity for off-ranch income pursuits by the owner.

This ranch would, under normal circumstances, provide for the owner's salary as well as a residual profit. Its most profitable level of production is at current levels or above.

4. Large Cow/Calf Ranch

This typical ranch has 485 head of livestock, 385 of which are brood cows, for a total of 5826 AUMs. Approximately 20 percent of the ranch grazing is a BLM permit, 15 percent is a USFS permit, 13 percent is a State lease, and the remaining 52 percent is private grazing. At this level of production, the revenues from ranching pay all of the variable production costs, all of the fixed overhead costs, all of the owner's salary, and has a residual profit of approximately $6,600.

Based on the ten-year-average budget, the FTPd is approximately 750 AUMs, well within the production capacity of the ranch. The FTPf is achieved at around 5300 AUMs, which is well within the potential maximum production capacity of the ranch (assuming a maximum production capacity of 7250 to 7560 AUMs), but occurs only with the inclusion of the BLM permit. At lower levels of production that exclude the BLM grazing, all variable production costs can be covered, but there is a decreasing ability to pay the owner's salary, and in some cases, none of the owner's salary is paid. As levels of production continue to decrease, the ability to pay fixed overhead costs decreases. At levels below 2950 AUMs, the ranch is no longer pay all fixed overhead costs (exclusive of the owner's salary). This is significant, in that a large ranch requires the full-time attention of the owner, with little or no opportunity for off-ranch income pursuits by the owner.

This ranch would, under normal circumstances, provide for the owner's salary as well as a residual profit. Its most profitable level of production is at current levels or above.

B. Northeast Region

This region was not analyzed due to the small number of BLM permits, none of which would be affected by management changes proposed in this EIS.

C. Northwest Region

Analysis of this region to be completed.

D. Southeast Region

Analysis of this region to be completed.

E. Southwest Region

Information for this region is currently being analyzed.

II. ENVIRONMENTAL CONSEQUENCES

A. NO ACTION ALTERNATIVE

1. Central Mountain Region

For detailed information on this section, refer to Table 1 in Section III of this report.

a. Extra-Small Cow/Calf Ranch

Based on the sources of information, before management changes, this typical ranch meets the FTPd, but not the FTPf. This typical ranch pays for all of the variable production costs, and half of the fixed overhead costs. Off-ranch income pays the other half of fixed overhead costs, about $6,300.

b. Small Cow/Calf Ranch

Based on the sources of information, before any management changes, this typical ranch meets both the FTPd and the FTPf. This typical ranch could pay all variable production costs and all fixed overhead costs, with a $420 residual profit to pay towards the owner's salary.

c. Medium Cow/Calf Ranch

Based on the sources of information, before any management changes, this typical ranch meets both the FTPd and the FTPf. This typical ranch pays for all the variable production costs, all of the fixed overhead costs, all of the owner's salary, and has a residual profit of about $4,100.

d. Large Cow/Calf Ranch

Based on the sources of information, before any management changes, this typical ranch meets both the FTPd and the FTPf. This typical ranch pays for all of the variable production costs, all of the fixed overhead costs, all of the owner's salary, and has a residual profit of about $6,600.

e. Conclusion

Under this alternative, all affected ranches in the four typical ranch size categories would continue to meet the FTPd. Three of the typical ranch sizes (small, medium, and large) would also continue to meet the FTPf. Local governments and agencies would continue to receive revenues from these ranch operations as described under Affected Environment, at their current rates.

2. Northeast Region

This region was not analyzed due to the small number of BLM permits, none of which would be affected by management changes proposed in this EIS.

3. Northwest Region

Analysis of this region to be completed.

4. Southeast Region

Analysis of this region to be completed.

5. Southwest Region

Information for this region is currently being analyzed.

B. RAC ALTERNATIVE

1. Central Mountain Region

For details under this section, refer to Tables 5a and 5b in Section III of this report.

a. Extra-Small Cow/Calf Ranch

Based on the sources of information, the management changes under this alternative would result in over a 100 percent loss of ranch income (gross margin) due to a negative gross margin. The ranch can no longer meet the FTPd or the FTPf, and the rancher can no longer pay variable production costs or fixed overhead costs. The ranch would be financially better off to discontinue grazing the BLM permit, at least in the short term. If the ranch has other, non-BLM grazing, the ranch could continue to operate on that basis only, provided that the remaining number of AUMs is above the FTPd, or 250 AUMs. If the ranch does not have non-BLM grazing, the ranch operation would have to cease, and all fixed overhead costs would have to be paid from off-ranch income, as well as maintaining their current standard of living.

The cost of the rancher paying for the cost of improvements required under this alternative is an additional $850 per year over a ten year period. A 20 percent reduction in BLM AUMs is not relevant under this alternative, as the ranch is worse off financially to use any part of the BLM permit.

b. Small Cow/Calf Ranch

Based on the sources of information, the management changes under this alternative would result in an 80 percent loss of ranch income (gross margin). The ranch still meets the FTPd, but not the FTPf. The ranch can still pay all of the variable production costs, but will need to secure other grazing, or an additional $13,300 of off-ranch income to pay all fixed overhead costs, and $13,720 to maintain their current standard of living. . When compared to lower levels of production excluding the BLM permit, the amount of gross margin available to pay fixed overhead costs would be greater when the permit is excluded, under this alternative. This ranch would be worse off, financially, to continue grazing on the BLM permit, at least in the short term.

The cost of the rancher paying for the cost of improvements required under this alternative is an additional $700 per year over a 10 year period. If a 20 percent reduction in BLM AUMs is added to the management changes, ranch income (gross margin) will be reduced by an additional $400

c. Medium Cow/Calf Ranch

Based on the sources of information, management changes under this alternative would result in over a 34 percent loss or ranch income (gross margin). The ranch still meets the FTPd, but not the FTPf. The ranch can still pay all variable production costs and fixed overhead costs, but only one-third of the owner's salary. The ranch will need to secure other grazing, or the family will need $10,300 of off-ranch income to pay the remainder of the owner's salary, or $14,400 to maintain their current standard of living. When compared to lower levels of production excluding the BLM permit, the amount of gross margin available to pay fixed overhead costs would be greater when the permit is excluded, under this alternative. This ranch would be worse off, financially, to continue grazing on the BLM permit, at least in the short term.

If a 20 percent reduction in BLM AUMs is added to the management changes, these figures are $12,050 and $16,050 respectively. The cost of the rancher paying for the cost of improvements required under this alternative is an additional $1,550 per year over a 10 year period

d. Large Cow/Calf Ranch

Based on the sources of information, management changes under this alternative would result in nearly a 22 percent loss of ranch income (gross margin). The ranch still meets the FTPd, but not the FTPf. The ranch can still pay all variable production costs and fixed overhead costs, but only 60 percent of the owner's salary. The ranch will need to secure other grazing, or the family will need $8,200 of off-ranch income to pay the remainder of the owner's salary, or $14,900 to maintain their current standard of living. This is approximately equal to the level of profitability if the ranch were to stop grazing the BLM permit.

The cost of the rancher paying for the cost of improvements required under this alternative is an additional $1,450 per year over a 10 year period. If a 20 percent reduction in BLM AUMs is added to the management changes, the off-ranch income (gross margin) will need to increase to $11,300 and $18,000. With the addition of either the cost of improvements or the reduction in grazing, the ranch would be more profitable to discontinue grazing the BLM permit, at least in the short term.

e. Conclusion

As a result of management changes under this alternative, all economic activity from all of the affected BLM permits on extra-small, small, and medium ranches would most likely stop. Only the affected large ranches would probably continue economic activity associated with the BLM permit, and only if there are no reductions in AUMs, and the rancher does not have to bear the cost of improvements himself.

Local governments and agencies could potentially lose: per head livestock taxes; fees and expenses from reduced numbers of livestock on affected BLM permits; maintenance of and new investments in capital improvements of facilities on affected BLM grazing land; and taxable base from owned improvements on affected BLM grazing land. If there are any extra-small affected ranches that are exclusively dependent on BLM grazing, local governments could also lose the taxable base on the private property, as a business, as well.

2. Northeast Region

This region was not analyzed due to the small number of BLM permits, none of which would be affected by management changes proposed in this EIS.

3. Northwest Region

Analysis on this region to be completed.

4. Southeast Region

Analysis on this region to be completed.

5. Southwest Region

Information on this region currently being analyzed.

C. FALLBACK ALTERNATIVE

1. Central Mountain Region

For details under this section, refer to Tables 9a and 9b in Section III of this report.

a. Extra-Small Cow/Calf Ranch

Based on the sources of information, the management changes in this alternative would result in over a 100 percent loss of ranch income (gross margin) due to a negative gross margin. This ranch no longer meets the FTPd or the FTPf. The rancher can no longer pay variable production costs or fixed overhead costs. The ranch would be better off, financially, to discontinue grazing on the BLM permit, at least in the short term. If the ranch has other, non-BLM grazing or can secure other grazing, the ranch could continue to operate on that basis only, provided that the remaining number of AUMs is above the FTPd, or 250 AUMs. If the ranch does not have non-BLM grazing or cannot secure other grazing, the ranch operation would have to cease, and all fixed overhead costs would have to be paid from off-ranch income, as well as maintaining their current standard of living.

The cost of the rancher paying for the cost of improvements required under this alternative is an additional $650 per year over a 10 year period. A 20 percent reduction in BLM AUMs is not relevant under this alternative, as the ranch is worse off using any part of the BLM permit.

b. Small Cow/Calf Ranch

Based on the sources of information, the management changes under this alternative would result in an 82.5 percent loss of ranch income (gross margin). The ranch still meets the FTPd, but not the FTPf. The ranch can still pay all of the variable production costs, but will need to secure other grazing, or an additional $13,700 of off-ranch income to pay all fixed costs, and $14,100 to maintain their current standard of living. When compared to lower levels of production excluding the BLM permit, the amount of gross margin available to pay fixed overhead costs would be greater when the permit is excluded, under this alternative. This ranch would be worse off, financially, to continue grazing on the BLM permit, at least in the short term.

The cost of the rancher paying for the cost of improvements required under this alternative is an additional $750 per year over a 10 year period. If a 20 percent reduction in BLM AUMs is added to the management changes, ranch income (gross margin) will be reduced by an additional $300.

c. Medium Cow/Calf Ranch

Based on the sources of information, the management changes under this alternative would result in a loss of ranch income (gross margin) of over 44 percent. The ranch still meets the FTPd, but not the FTPf. The ranch can still pay all of the variable production costs and all of the fixed overhead costs, but only contributes $1,000 to the owner's salary. The ranch will need to secure other grazing, or the family will need $14,550 of off-ranch income to pay the remainder of the owner's salary, or $18,650 to maintain their current standard of living. . When compared to lower levels of production excluding the BLM permit, the amount of gross margin available to pay fixed overhead costs would be greater when the permit is excluded, under this alternative. This ranch would be worse off, financially, to continue grazing on the BLM permit, at least in the short term.

The cost of the rancher paying for the cost of improvements required under this alternative is an additional $1,550 per year over a 10 year period. If a 20 percent reduction in BLM AUMs is added to the management changes, the ranch can no longer pay all of the fixed overhead costs, and pays nothing for the owner's salary. The off-ranch income needs increase by $200 to pay remaining fixed overhead costs, $16,100 to pay overhead and owner's salary, and $20,200 to maintain their current standard of living.

d. Large Cow/Calf Ranch

Based on the sources of information, management changes under this alternative would result in a loss of ranch income (gross margin) of about 31 percent. The ranch still meets the FTPd, but not the FTPf. The ranch can still pay all of the variable production costs and fixed overhead costs, but only 40 percent of the owner's salary. The ranch will need to secure other grazing, or the family will need $14,500 of off-ranch income to pay the remainder of the owner's salary, or $21,200 to maintain their current standard of living. Under this alternative, the ranch would be more profitable to discontinue grazing the BLM permit, at least in the short term.

The cost of the rancher paying for the cost of improvements required under this alternative is an additional $1,450 per year over a 10 year period. If a 20 percent reduction in BLM AUMs is added to the management changes, the off-ranch income needs increase to $17,400 and $24,000, respectively.

e. Conclusion

As a result of management changes under this alternative, all economic activity from all of the affected BLM permits on all four typical ranch sizes would most likely stop. Local governments and agencies could potentially lose: per head livestock taxes, fees and expenses from reduced numbers of livestock on affected permits; maintenance and investments in capital improvements of facilities on affected BLM grazing land; and taxable base from owned improvements on affected BLM grazing land. If there are any extra-small affected ranches that are exclusively dependent on BLM grazing land, local governments could also lose the taxable base on the private property, as a business, as well.

2. Northeast Region

This region was not analyzed due to the small number of BLM permits, none of which would be affected by management changes proposed in this EIS.

3. Northwest Region

Analysis on this region to be completed.

4. Southeast Region

Analysis on this region to be completed.

5. Southwest Region

Information on this region currently being analyzed.

D. COUNTY ALTERNATIVE

1. Central Mountain Region

For details under this section, refer to Tables 13a and 13b in Section III of this report.

a. Extra-Small Cow/Calf Ranch

Based on the sources of information, the management changes under this alternative would result in a 69 percent loss of ranch income (gross margin). This ranch would still meet the FTPd, but not the FTPf. The ranch could still pay all variable production costs and about 14 percent of fixed overhead costs. If the ranch cannot secure other grazing the off-ranch income will need to increase by $3,500 to pay all fixed overhead costs for a total of $9,800. When compared to lower levels of production excluding the BLM permit, the amount of gross margin available to pay fixed overhead costs is slightly higher when the permit is excluded.

The cost of the rancher paying for the cost of improvement required under this alternative is an additional $600 per year over a 10 year period. If a 20 percent reduction in BLM AUMs is added to the management changes, ranch income (gross margin) will be reduced an additional $300, requiring a total of $10,100 in off-ranch income to pay all fixed overhead costs and maintain their current standard of living.

b. Small Cow/Calf Ranch

Based on the sources of information, the management changes under this alternative would result in a 38 percent loss of ranch income (gross margin). This ranch still meets the FTPd, but not the FTPf. The ranch can still pay all of the variable production costs, but will need to secure other grazing, or $6,150 of off-ranch income to pay all fixed overhead costs, and $6,570 to maintain their current standard of living. When compared to lower levels of production excluding the BLM permit, the amount of gross margin available to pay fixed overhead costs would be greater when the permit is excluded, under this alternative. This ranch would be worse off, financially, to continue grazing on the BLM permit, at least in the short term.

The cost of the rancher paying for the cost of improvements required under this alternative is an additional $750 per year over a 10 year period. If a 20 percent reduction of BLM AUMs is added to management changes, ranch income (gross margin) will be reduced by an additional $520.

c. Medium Cow/Calf Ranch

Based on the sources of information, the management changes under this alternative would result in a loss of ranch income (gross margin) of about 23 percent. The ranch still meets the FTPd, but not the FTPf. The ranch can still pay all of the variable production costs and fixed overhead costs, but only two-thirds of the owner's salary. The ranch would have to secure other grazing, or the family will need off-ranch income of $5,600 to pay the remainder of the owner's salary, or $9,700 to maintain their current standard of living. When compared to lower levels of production excluding the BLM permit, the amount of gross margin available to pay fixed overhead costs would be about the same when the permit is excluded, under this alternative.

The cost of the rancher paying for the cost of improvements required under this alternative is an additional $1,150 per year over a 10 year period. If a 20 percent reduction in BLM AUMs is added to the management changes, only one-half of the owner's salary is paid, and the family will need $7,500 and $11,600, respectively. If either the grazing is reduced, or the rancher must pay for the costs of improvements, this ranch would be worse off, financially, to continue grazing on the BLM permit, at least in the short term.

d. Large Cow/Calf Ranch

Based on the sources of information, management changes under this alternative would result in a loss of ranch income (gross margin) of 8.3 percent. The ranch still meets the FTPd, and the FTPf. The ranch can

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still pay all variable production costs, fixed overhead costs, and owner's salary with a residual profit of $1,000. Under this alternative, the ranch would be more profitable to continue using the BLM permit.

The cost of the ranch paying for the cost of improvements required under this alternative is an additional $850 per year over a 10 year period. If a 20 percent reduction in BLM AUMs is added to the management changes, the ranch can pay on 85 percent of the owner's salary, but is still more profitable to continue grazing the BLM permit. The off-ranch income needs are $2,300 to pay the remainder of the owner's salary, or $5,800 to maintain their current standard of living. With both conditions, reduction of BLM AUMs and cost of improvements, the ranch is still better off, financially, to continue grazing the BLM permit.

f. Conclusion

As a result of management changes under this alternative, all economic activity from all of the affected extra-small and small ranch permits would most likely stop. Economic activity on the affected medium ranches would continue provided the ranch does not have to bear the cost of improvements or suffer a 20 percent reduction in BLM AUMs. Economic activity on all affected large ranches would most likely continue.

Local governments and agencies could potentially lose: per head livestock taxes, fees and expenses from affected extra-small, small and possibly medium ranches on reduced numbers of livestock; maintenance and new investments in capital improvements of facilities on BLM grazing land on affected extra-small, small and possibly medium ranches; and taxable base from owned improvements on BLM grazing land on affected extra-small, small and possibly medium ranches.

2. Northeast Region

This region was not analyzed due to the small number of BLM permits, none of which would be affected by management changes proposed in this EIS.

3. Northwest Region

Analysis on this region to be completed.

4. Southeast Region

Analysis on this region to be completed.

5. Southwest Region

This region is currently being analyzed.

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III TABLES AND CHARTS

This section contains tables and charts used in the analysis.

Table 1. Central Mountain Region
Current Conditions/No Action Alternative

	Extra-Small Cow/Calf Ranch	Small Cow/Calf Ranch	Medium Cow/Calf Ranch	Large Cow/Calf Ranch
Typical Ranch AUMs*	636	1596	3408	5826
Percent BLM	26.73%	11.78%	20.98%	20.01%
Gross Revenues**	$15,041	$39,762	$84,571	$137,899
Gross Returns/AUM	$23.73	$24.91	$24.82	$23.67
Variable Produc-tion Costs**	$9,999	$22,676	$42,466	$69,244
Variable Produc-tion Costs/AUM	$15.72	$14.21	$12.46	$11.88
Gross Margin/AUM	$7.93	$10.70	$12.36	$11.79
Fixed Overhead Costs**	$11,346	$16,666	$38,029	$62,007
Financial Threshold for Production	250 AUMs	510 AUMs	375 AUMs	750 AUMs
Financial Threshold for Profitability	1430 AUMs	1550 AUMs	3100 AUMs	5260 AUMs
Amount of addi-tional income to pay Fixed Over-head Costs**	$6,300	$0	$0	$0

* Based on Table 3, Range Livestock Cost and Return Estimates for New Mexico, L. Allen Torell and Jerry Hawkes, Agricultural Experiment Station, New Mexico State University, for Extra-small, Small and Medium ranches. Large ranches are based on ten-year-average budgets developed by John Fowler, Ph.D., and Nick Ashcroft of New Mexico State University.

** Based on ten-year-average budgets developed by John Fowler, Ph.D., and Nick Ashcroft. Includes owner salary for medium and large ranches only.

Table 5a Central Mountain Region
RAC Alternative

	Extra-Small Cow/Calf Ranch	Small Cow/Calf Ranch	Medium Cow/Calf Ranch	Large Cow/Calf Ranch
Typical Ranch AUMs*	636	1596	3408	5826
Percent BLM	26.73%	11.78%	20.98%	20.01%
Gross Revenues**	$10,004	$29,574	$73,647	$129,570
Gross Returns/AUM	$15.73	$18.53	$21.61	$22.24
Variable Produc-tion Costs**	$11,780	$26,189	$45,931	$75,789
Variable Produc-tion Costs/AUM	$18.52	$16.41	$13.48	$13.01
Gross Margin/AUM	($2.79)	$2.12	$8.13	$9.23
Fixed Overhead Costs**	$11,346	$16,666	$38,029	$62,007
Financial Threshold for Production	Not possible w/ BLM permit, 250 AUMs w/o BLM permit	510 AUMs	375 AUMs	750 AUMs
Financial Threshold for Profitability	Not possible	7860 AUMs	4675 AUMs	6700 AUMs
Amount of addi-tional income to pay Fixed Over-head Costs**	$11,350 with BLM permit, $7,900 w/o BLM permit	$13,300 with BLM permit, $2,200 w/o BLM permit	$10,300 with BLM permit, $4,000 w/o BLM permit	$8,200 with BLM permit, $7,300 w/o BLM permit
Amount of addi-tional income to pay Fixed Costs if rancher pays cost of improve-ments	$12,200 with BLM permit, N/A w/o BLM permit	$14,000 with BLM permit, N/A w/o BLM permit	$11,850 with BLM permit, N/A w/o BLM permit	$9,650 with BLM permit, N/A w/o BLM permit

* Based on Table 3, Range Livestock Cost and Return Estimates for New Mexico, L. Allen Torell and Jerry Hawkes, Agricultural Experiment Station, New Mexico State University, for Extra-small, Small and Medium ranches. Large ranches are based on ten-year-average budgets developed by John Fowler, Ph.D., and Nick Ashcroft of New Mexico State University.

** Based on ten-year-average budgets, with cost and revenue adjustments as a result of management changes, developed by John Fowler, Ph.D., and Nick Ashcroft. Includes owner salary for medium and large ranches only.

Table 5b. Central Mountain Region
RAC alternative with 20% BLM permit reduction

	Extra-Small Cow/Calf Ranch	Small Cow/Calf Ranch	Medium Cow/Calf Ranch	Large Cow/Calf Ranch
Typical Ranch AUMs*	602	1558	3265	5593
Gross Revenues	$9,469	$28,870	$70,557	$124,388
Gross Returns/AUM	$15.73	$18.53	$21.61	$22.24
Variable Produc-tion Costs**	$11,421	$25,884	$44,568	$73,697
Variable Produc-tion Costs/AUM	$18.97	$16.61	$13.65	$13.18
Gross Margin/AUM	($3.24)	$1.92	$7.96	$9.06
Fixed Overhead Costs**	$11,346	$16,666	$38,029	$62,007
Amount of addi-tional income to pay Fixed Over-head Costs**	$11,350 with BLM permit, $7,900 w/o BLM permit	$13,700 with BLM permit, $2,200 w/o BLM permit	$12,050 with BLM permit, $4,000 w/o BLM permit	$11,300 with BLM permit, $7,300 w/o BLM permit
Amount of addi-tional income to pay Fixed Costs if rancher pays cost of improve-ments	$12,200 with BLM permit, N/A w/o permit	$14,400 with BLM permit, N/A w/o permit	$13,600 with BLM permit, N/A w/o permit	$12,750 with BLM permit, N/A w/o permit

* Based on Table 3, Range Livestock Cost and Return Estimates for New Mexico, L. Allen Torell and Jerry Hawkes, Agricultural Experiment Station, New Mexico State University, for Extra-small, Small and Medium ranches. Large ranches are based on ten-year-average budgets developed by John Fowler, Ph.D., and Nick Ashcroft of New Mexico State University.

** Based on ten-year-average budgets, with cost and revenue adjustments as a result of management changes, developed by John Fowler, Ph.D., and Nick Ashcroft. Includes owner salary for medium and large ranches only.

Table 9a. Central Mountain Region
Fallback Alternative

	Extra-Small Cow/Calf Ranch	Small Cow/Calf Ranch	Medium Cow/Calf Ranch	Large Cow/Calf Ranch
Typical Ranch AUMs*	636	1596	3408	5826
Percent BLM	26.73%	11.78%	20.98%	20.01%
Gross Revenues**	$11,200	$29,574	$70,409	$125,900
Gross Returns/AUM	$17.61	$18.53	$20.66	$21.61
Variable Produc-tion Costs**	$11,608	$26,573	$46,920	$78.411
Variable Produc-tion Costs/AUM	$18.25	$16.65	$13.77	$13.46
Gross Margin/AUM	($.64)	$1.88	$6.89	$8.15
Fixed Overhead Costs**	$11,346	$16,666	$38,029	$62,007
Financial Threshold for Production	Not possible w/ BLM permit, 250 AUMs w/o permit	510 AUMs	375 AUMs	750 AUMs
Financial Threshold for Profitability	Not possible	8,850 AUMs	5,500 AUMs	7,600 AUMs
Amount of addi-tional income to pay Fixed Over-head Costs**	$11,350 with BLM permit, $7,900 w/o permit	$13,650 with BLM permit, $2,200 w/o permit	$14,550 with BLM permit, $4,000 w/o permit	$14,500 with BLM permit, $7,300 w/o permit
Amount of addi-tional income to pay Fixed Costs if rancher pays cost of improve-ments	$12,000 with BLM permit, N/A w/o permit	$14,400 with BLM permit, N/A w/o permit	$16,100 with BLM permit, N/A w/o permit	$15,950 with BLM permit, N/A w/o permit

* Based on Table 3, Range Livestock Cost and Return Estimates for New Mexico, L. Allen Torell and Jerry Hawkes, Agricultural Experiment Station, New Mexico State University, for Extra-small, Small and Medium ranches. Large ranches are based on ten-year-average budgets developed by John Fowler, Ph.D., and Nick Ashcroft of New Mexico State University.

** Based on ten-year-average budgets, with cost and revenue adjustments as a result of management changes, developed by John Fowler, Ph.D., and Nick Ashcroft. Includes owner salary for medium and large ranches only.

Table 9b. Central Mountain Region
Fallback Alternative with 20% BLM permit reduction

	Extra-Small Cow/Calf Ranch	Small Cow/Calf Ranch	Medium Cow/Calf Ranch	Large Cow/Calf Ranch
Typical Ranch AUMs*	602	1558	3265	5593
Gross Revenues	$10,601	$28,870	$67,455	$120,865
Gross Returns/AUM	$17.61	$18.53	$20.66	$21.61
Variable Produc-tion Costs**	$11,238	$26,259	$45,515	$76,247
Variable Produc-tion Costs/AUM	$18.67	$16.85	$13.94	$13.63
Gross Margin/AUM	($1.06)	$1.68	$6.72	$7.98
Fixed Overhead Costs**	$11,350	$16,666	$38,029	$62,007
Amount of addi-tional income to pay Fixed Over-head Costs**	$11,350 with BLM permit, $7,900 w/o permit	$14,050 with BLM permit, $2,200 w/o permit	$16,100 with BLM permit, $4,000 w/o permit	$17,400 with BLM permit, $7,300 w/o permit
Amount of addi-tional income to pay Fixed Costs if rancher pays cost of improve-ments	$12,000 with BLM permit, N/A w/o permit	$14,800 with BLM permit, N/A w/o permit	$17,650 with BLM permit, N/A w/o permit	$18,850 with BLM permit, N/A w/o permit

* Based on Table 3, Range Livestock Cost and Return Estimates for New Mexico, L. Allen Torell and Jerry Hawkes, Agricultural Experiment Station, New Mexico State University, for Extra-small, Small and Medium ranches. Large ranches are based on ten-year-average budgets developed by John Fowler, Ph.D., and Nick Ashcroft of New Mexico State University.

** Based on ten-year-average budgets, with cost and revenue adjustments as a result of management changes, developed by John Fowler, Ph.D., and Nick Ashcroft. Includes owner salary for medium and large ranches only.

Table 13a. Central Mountain Region
County Alternative

	Extra-Small Cow/Calf Ranch	Small Cow/Calf Ranch	Medium Cow/Calf Ranch	Large Cow/Calf Ranch
Typical Ranch AUMs*	636	1596	3408	5826
Percent BLM	26.73%	11.78%	20.98%	20.01%
Gross Revenues**	$12,370	$35,894	$75,794	$133,008
Gross Returns/AUM	$19.45	$22.49	$22.24	$22.83
Variable Produc-tion Costs**	$10,788	$25,376	$43,380	$70,000
Variable Produc-tion Costs/AUM	$16.96	$15.90	$12.73	$12.02
Gross Margin/AUM	$2.49	$6.59	$9.51	$10.82
Fixed Overhead Costs**	$11,346	$16,666	$33,029	$62,007
Financial Threshold for Production	250 AUMs	510 AUMs	375 AUMs	750 AUMs
Financial Threshold for Profitability	4,550 AUMs	2,500 AUMs	4,000 AUMs	7,600 AUMs
Amount of addi-tional income to pay Fixed Over-head Costs**	$9,800 with BLM permit, $7,900 w/o permit	$6,150 with BLM permit, $2,200 w/o permit	$5,600 with BLM permit, $4,000 w/o permit	$0 with BLM permit, $7,300 w/o permit
Amount of addi-tional income to pay Fixed Costs if rancher pays cost of improve-ments	$10,400 with BLM permit, N/A w/o permit	$6,900 with BLM permit, N/A w/o permit	$6,750 with BLM permit, N/A w/o permit	$0 with BLM permit, N/A w/o permit

* Based on Table 3, Range Livestock Cost and Return Estimates for New Mexico, L. Allen Torell and Jerry Hawkes, Agricultural Experiment Station, New Mexico State University, for Extra-small, Small and Medium ranches. Large ranches are based on ten-year-average budgets developed by John Fowler, Ph.D., and Nick Ashcroft of New Mexico State University.

** Based on ten-year-average budgets, with cost and revenue adjustments as a result of management changes, developed by John Fowler, Ph.D., and Nick Ashcroft. Includes owner salary for medium and large ranches only.

	Extra-Small Cow/Calf Ranch	Small Cow/Calf Ranch	Medium Cow/Calf Ranch	Large Cow/Calf Ranch
Typical Ranch AUMs*	602	1558	3265	5593
Gross Revenues	$11,709	$35,039	$72,614	$127,688
Gross Returns/AUM	$19.45	$22.49	$22.24	$22.83
Variable Produc-tion Costs**	$10,452	$25,089	$42,102	$68,000
Variable Produc-tion Costs/AUM	$17.36	$16.08	$12.89	$12.16
Gross Margin/AUM	$2.09	$6.41	$9.35	$10.67
Fixed Overhead Costs**	$11,350	$16,666	$38,029	$62,007
Amount of addi-tional income to pay Fixed Over-head Costs**	$10,100 with BLM permit, $7,900 w/o permit	$6,700 with BLM permit, $2,200 w/o permit	$7,500 with BLM permit, $4,000 w/o permit	$2,300 with BLM permit, $7,300 w/o permit
Amount of addi-tional income to pay Fixed Costs if rancher pays cost of improve-ments	$10,750 with BLM permit, N/A w/o permit	$7,450 with BLM permit, N/A w/o permit	$8,650 with BLM permit, N/A w/o permit	$3,150 with BLM permit, N/A w/o permit

* Based on Table 3, Range Livestock Cost and Return Estimates for New Mexico, L. Allen Torell and Jerry Hawkes, Agricultural Experiment Station, New Mexico State University, for Extra-small, Small and Medium ranches. Large ranches are based on ten-year-average budgets developed by John Fowler, Ph.D., and Nick Ashcroft of New Mexico State University.

** Based on ten-year-average budgets, with cost and revenue adjustments as a result of management changes, developed by John Fowler, Ph.D., and Nick Ashcroft. Includes owner salary for medium and large ranches only.

APPENDIX E
CUSTOM AND CULTURE

Early in the EIS writing process BLM committed to the counties and tribes of New Mexico that if they would submit a three page or less summary of their Custom and Culture, the BLM would utilize them in the EIS analysis and print them in an appendix of the EIS. Appendix E is composed of what was submitted word-for-word. The originals are available for review at the BLM New Mexico State Office.

Write-ups were received from the following:

Counties
Catron
Chaves
Curry
Eddy
Grant
Hidalgo
Lea
Lincoln
Luna
Otero
Rio Arriba
Santa Fe
Sierra

Tribes
Navajo Nation
Pueblo of Acoma

By publishing these write-ups BLM is not endorsing the reports as valid, historically or legally accurate, or complete.

The Custom and Culture write-ups start in the following page of Appendix E.

Write-up	Page no.
Catron	E-2
Chaves	E-13
Curry	E-17
Eddy	E-18
Grant	E-21
Hidalgo	E-25
Lea	E-32
Lincoln	E-34
Luna	E-37
Otero	E-42
Rio Arriba	E-45
Santa Fe	E-49
Sierra	E-51
Navajo Nation	E-59
Pueblo of Acoma	E-62

CATRON COUNTY
CUSTOM AND CULTURE

The Definition of Custom & Culture in Catron County

Custom & Culture

The purpose of the custom and culture section of the comprehensive plan is to begin to define custom and culture as required by the National Environmental Policy Act (NEPA).

Among other things, NEPA requires:

It is the continuing responsibility of the Federal Government to use all practical means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans. functions, programs, and resources to the end that the Nation may-

(2) assure for all Americans safe, healthful, productive and aesthetically and culturally pleasing surroundings,...

(4) preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment which supports diversity and variety of individual choice.[1]

Culture, as used in NEPA, is defined as:

The body of "customary beliefs, social forms, and material traits[2] constituting a distinct complex of tradition of a racial, religious or social group"[3] --that complex whole that includes knowledge, belief, morals, law, customs, opinions, religion, superstition and an.

As stated in the above definition, culture includes custom.

"Custom" is defined by Black's Law Dictionary as:

A usage or practice of the people, which by common adoption and acquiescence, and by long and unvarying habit, has become compulsory, and has acquired the force of a law with respect to the place or subject matter to which it relates... An habitual or customary practice, more or less widespread, which prevails within a geographic or sociological area.[4]

Custom, as used in the context of the comprehensive plan, refers to land usages and practices that have "acquired the force of a tacit and common Consent." Such land uses and practices, livestock grazing, logging, and hunting, to mention just a few, are well established, readily identifiable, and are the foundation of Catron County's economy.

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[1] 42 U.S.C. §4331(b)(2),(4).

[2] *Webster's Ninth New Collegiate Dictionary*, 1991, p.314.

[3] *Webster's Ninth New Collegiate Dictionary*, 1991, p. 314

[4] *Black's Law Dictionary*, p. 348 (5th ed. 1979).

Common use and everyday experience teaches us that the words "custom" and "culture" are frequently interchanged. We often rely on just one of the two terms to convey the meanings of both. Yet, in very important ways, the individual meanings of "custom" and "culture" are quite different and are not so easily switched or substituted. Culture deals more with human activities and practices and the acceptance and adoption of those activities and practices as community norms. In many ways, culture is invisible, at least in the sense of not being immediately evident on the surrounding landscape. It pertains to what people believe and value and how they pursue and realize those beliefs and values. Custom, on the other hand, is the way that people implement their culture. It deals with the way that people traditionally use the land and its natural resources, make a living and act toward each other. Custom is the visible and tangible manifestation of the shared beliefs that binds a group of people into a community.

In Catron County, culture, in a very down to earth sense, comprises the shared values and beliefs that give guidance and meaning to the lives of local residents. These shared values and beliefs, including such traits as independence, egalite, self-sufficiency and devotion to family, work and the land, have their origins in religion, folk traditions and in the shaping influence of environment on the individual and community. Moreover, culture in Catron County includes the array of social standards and social institutions, from family ties, to kindly neighbors, to high school sports, to the county rodeo, that hold together and give common purpose and meaning to community life.

Of all the qualities of culture coloring the American experience, equality may be the most crucial.

> The principle of equality, which makes men independent of each other, gives them a habitat and taste for following in their private actions, no other guide than their own will. That complete independence, which they constantly enjoy in regard to their equals and in the intercourse of private life, tends to make them look upon all authority with a jealous eye and speedily suggests to them the notion and the love of political freedom. Men living at such times have a natural bias towards free institutions. Take any one of them at a venture and search if you can his most deep seated instincts, and you will find that, of all governments, he will soonest conceive and most highly value that government whose head he has himself elected and whose administration he may control.[5]

Culture is a people's identity and the foundation upon which political society and an economy are built. Without culture, without commitment to democracy, devotion to equality, and celebration of political freedom, the people of Catron County would be something less than what de Tocqueville defined to be American. The citizens of Catron County are inseparable from their culture. They are, first and foremost, Americans with a deep-seated commitment to democracy, equality and political freedom. They are also unique products of the complex Web of land uses and practices, values and beliefs that nurture their communities, sustain their economies, empower their local government, and give form and -shape to their spiritual and physical environments. Stripped of their land use practices and usages, denied their values and beliefs, they would lose coherence as a people. If stripped and denied of their private property rights, their equitable estates on federal lands, their right to practice self-rule, to pursue equality and to live and practice the challenge of political freedom, they would lose the very essence of what it means to be American: To be sovereign in one sown land; to be filly equal in matters of power; and to be the final beneficiaries of political freedom.

The Native American roots of culture and custom are the oldest in New Mexico. In 1598, Juan de Onate laid the foundation for permanent Spanish settlement in New Mexico. Spanish institutions exerted a profound influence on New Mexicans who would live under Spanish and Mexican law for two hundred fifty years before becoming part of the United States, an additional and profound influence creating the customs and culture of Spanish and Mexican people living in New Mexico was the Roman Catholic Church. The Church provided these people with their religious values, family structures and sense of community.

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[5] de Tocqueville, Alexis, *Democracy in America*, Vol. II, New York: Random House, p. 304.

Kearny's Code-Protection of Existing Customs & Culture

In 1846, General Kearny took possession of New Mexico, imposed martial law and established a code of conduct which would become known as Kearny's Code. Within the context of this Code, he recognized the existing culture and custom of the area and pledged to the inhabitants, as citizens of a Territory of the United States, that the Army would protect and defend these customs and cultures. Kearny's Code remains part of the statutory law of the State of New Mexico today.

In addition to the culture described above, perhaps the most important custom which would be protected under the Kearny Code was the right of private property ownership. Prior to the imposition of Martial Law, title to private property could only be acquired through permission of the Spanish King, the Mexican government or their representatives. To acquire title under Spanish or Mexican law, the citizen or settler first had to request permission of the King or government. Once that permission was acquired, the settler was allowed to enter the property, then occupy and improve that property. These requirements of occupancy and improvement came to be known as public good and public weal. As described by J. Brocchus in his dissenting opinion in Pino v. Hatch. (Sup. Ct. Jan. 1855), "[t]hose uses were the cultivation of the soil, the pasting of flocks, the promotion and encouragement of industrial pursuits, and in general such purposes as looked to the settlement of the uninhabited portions of the province. the enhancement of the value of the soil, the development of the resources of the country, and the promotion of the public good.

Public weal was defined in much the same manner as public good. In that same opinion, J. Brocchus describes "public weal" as public good with an additional requirement of "the enhancement of the value of the adjacent lands belonging to the public domain."

After four years of land occupancy and creating public good and public weal, the settler could then apply for land title. Once the King's or government's representative was ensured that the requirements of occupancy, public good and public will were satisfied, the King or government granted title to the requesting party.

Another way that title could be acquired was a grant by the Spanish or Mexican government for services rendered such as for assuming responsibility for defense against nomadic Indians or for "peopling" or developing the tracts in question. Although the acquisition of lands by grant from the King or government came to an end with the signing of the Treaty of Guadalupe Hidalgo in 1848, the custom of occupancy and creating public good/public weal did not. These concepts carried through to the American concept of preemption. Under preemption, the settler was also required to hold the land by occupancy, then create "public good" and "public weal" before he could acquire title.

Although Congress questioned the Kearny Code as evidenced by a Resolution sent to President Polk, the President rebuffed Congress and "..justified the general's actions as extending to these people those rights which were so cherished in the United States..."

Treaty of Guadalupe Hidalgo---Protection of Existing Property Rights, Culture, and Customs

With the signing of the Treaty of Guadalupe Hidalgo, which ended the Mexican-American War, in 1848, the New Mexico Territory was Formally ceded to the American Government. The terms of the Treaty explicitly specified that any property right, culture and custom which had been recognized by the Spanish or Mexican governments before the lands were ceded to the United States would continue intact and be honored and protected by the United States.

After the arrival of Kearny, the ceding of New Mexico to the United States and the establishment of Kearny's Code, the third dominant culture was introduced to New Mexico when an immigration, consisting largely of Scottish American merchants, miners, ranchers, skilled workers and freighters came to the Territory,

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married local Spanish/Mexican women and became integrated into the now Hispanic-American community. This Hispanic-American influence is still the most distinguishing contributor to the culture and custom in New Mexico.

Today, the Scot-Irish contribution to the culture of Catron County is largely that of the border estate between Scotland and England.

> The border derived its cultural character from one decisive historical fact, For seven centuries, the Kings of Scotland and England could not agree who owned it... From the year 1040 to 1745, every English monarch but three suffered a Scottish invasion, or became an invader in his turn... This incessant violence shaped the culture of the border region...
>
> To the first settlers, the American back country was a dangerous environment, just as their British borderlands had been. The borders were more at home than others in this anarchic environment, which was well suited to their family system, their warrior ethics, their farming and herding economy, their attitudes toward land and wealth and their ideas of work and power. So well adapted was the border culture to this environment that other ethnic groups tended to copy it.[6]

The Custom of Livestock Grazing in Catron County

The Development of Equitable Estates for Grazing on Federal Lands (Adapted from the Catron County Comprehensive Land Use and Policy Plan, Part II, Chapter 2, pp.2-5 to 2-14)

Scot-Irish, Mexican, & Spanish Influence on Catron County's Land Use Practices

There is no question that the culture of the Scot-Irish Mexican and Spanish people living in Catron County have shaped the land use practices, customs and economy of the area. With regard to livestock grazing, these customs were also influenced by the local environment. As the local residents will attest the environment in Catron County for grazing livestock is harsh. The weather is hot, the rainfall is sparse and it is difficult to work the soil to grow crops on anything but lands subject to irrigation. Because of these "abnormal conditions" when compared to lands east of the 30th meridian, it takes a great deal of land to sustain even a modest size herd of livestock. These environmental factors shaped the custom of livestock -grazing in Catron County.

As stated above, land acquisition under the governments of Mexico and Spain came from grants by the King of Spain or the Government of Mexico. However, because of environmental factors described above, that grant of land was normally not enough to sustain a herd of livestock. Therefore, in addition to the use of his property, the Spanish or Mexican citizen also used the other unclaimed lands belonging to the government, in connection with his private property, to sustain his herd, his way of life and to perpetuate community stability.

In New Mexico, the development of livestock grazing under the American system paralleled, intertwined and emulated the Spanish and Mexican custom of using the unclaimed public domain. Under the American system, although a settler could make a good living on 160 or 640 acres of homestead lands east of the 30th meridian, the same could not be said in Catron County. As the Spanish and Mexican citizens had discovered, the environment in New Mexico required more land for grazing than could be granted to the settler. As such, a parallel custom, learned from the Spanish and Mexican settlers, became the American custom. Allowing livestock to graze on the unclaimed public domain became the norm.

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[6] Fischer, David Hackett, *Albion's Seed, Four British Folkways in America*. Oxford, 1989.

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Encouragement of Livestock Grazing to Assist in Populating the West

Not only was the grazing of livestock on the unclaimed federal lands the custom in Catron County, the practice was encouraged by the United States Presidents and by the Army who wished to quickly settle and occupy these lands for the United States. There were three major reasons that American settlers and pioneers were desperately needed to quickly settle the New Mexico territories:

1. Concern that a Foreign power would take control of these lands by occupancy.

2. The problem of securing the land from hostile Indian tribes.

3. The protection of the public traveling across the continent.

Concern That a Foreign Power Would Take Control or These Lands by Occupancy.

Many American Presidents were afraid that, unless the New Mexico territories were populated and settled by citizens loyal to the United States, a foreign power would take control of these lands by occupancy. Even though, the Treaty of Guadalupe Hidalgo had ended the war with Mexico, the American Presidents wanted to be sure that these newly acquired lands would be populated with citizens loyal to the United States. As President Polk explained in 1847:

> Mexico is too feeble a power to govern these Provinces, lying as they do at a distance of more than 1000 miles from her capital, and if attempted to be retained by her they would constitute but for a short time even nominally a part of her dominions...
>
> The sagacity of powerful European nations has long since directed their attention to the commercial importance of that Province, and there can be little doubt that the moment the United States shall relinquish their present occupation of it and their claim to it as indemnity an effort would be made by some foreign power to possess it, either by conquest or purchase. If no foreign government should acquire it in either of these modes, an independent revolutionary government would probably be established by the inhabitants and such foreigners as may remain in or remove to the country as soon as it shall be known that the United States have abandoned it. Such a government would be too feeble long to maintain its separate existence, and would finally become annexed to or be a dependent colony of some more powerful state. ..no foreign power shall without our consent be permitted to plant or establish any new colony or dominion on any part of the North American continent...
>
> The Provenances of New Mexico and the Californias are contiguous to the territories of the United States, and if brought under the government of our laws their resource---mineral, agricultural, manufacturing, and commercial---would soon be developed.[7]

Securing the Land From Hostile Indian Tribes

In addition to the concern over the use of Foreign powers on American soil, the Congress and the Presidents also Faced the problem of securing the land from hostile Indian tribes. When President Zachary Taylor received the helm of the nation, he focused on occupying and controlling the southwest region because of her great agricultural and mineral wealth. However, as he soon discovered, the Southwest was not easily controlled because of its numerous Indian tribes.

President Millard Fillmore also faced problems with the warring Indian tribes in the Southwest. In his third address to the Nation, he stated:

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[7] Polk, James K, *IV Messages and Papers of the President*, 1847. New York, 1897, pp. 539-540.

> Every effort should-be made to protect our frontier and that of the adjoining Mexican States from the incursions of the Indian tribes, of about 11,000 men of which the Army is composed, nearly 8,000 are employed in the defense of the newly acquired territory (including Texas) and of the emigrants proceeding thereto. I am gratified to say that these efforts have been usually successful. With the exception of some partial outbreaks in California and Oregon and occasional depredation on a portion of the Rio Grande, owing, it is believed, to the disturbed state of that border region, the inroads of the Indians have been effectually restrained.[8]

Fillmore also continually reminded Congress that the Treaty of Guadalupe Hidalgo also required the United States to protect the Mexican Frontier. Although Fillmore was able to convince Congress to appropriate larger regimes of the cavalry to the Southwest, he also recognized that the best protection against hostile Indians was to increase permanent settlements.[9]

Protection of the Public Traveling Across the Continent

The government wanted to colonize the West as quickly as possible for the protection of the public traveling across the continent. As stated by President Polk:

> For the protection of emigrants while on their way to Oregon against the attacks of the Indian tribes occupying the country through which they pass, I recommend that suitable number of stockades and blockhouse forts be erected along the usual route between our frontier settlements on the Missouri and the Rocky Mountains, and that an adequate force of mounted riflemen be raised to guard and protect them on their journey...[10]

Protection of the Customs, Cultures & Property Right of Those Already Living in the New Mexico Territories

After recognizing the difficulties of life in the southwest and the importance of keeping those lands for the United States, the Congress and presidents would face the problem of determining (1) how the land would be secured for those already living in the Southwest and (2) how the land would be transferred to those moving to the Southwest. With regard to those already occupying the land, the answer to the question would be contained in "local law" and an international treaty.

As stated above, Kearny's Code and the Treaty of Guadalupe Hidalgo guaranteed the protection of the customs, cultures and property rights of those already living in the New Mexico territories. Because many of these settlers had already acquired property titles and additional property use rights from the Spanish or Mexican governments or by occupancy and the promotion of the public good and the public weal, those rights would be protected and honored by the United States government under the treaty and Kearny's Code. Such protection also extended to those land use rights which were not codified by legal title because of the promise to protect local custom. The Treaty of Guadalupe Hidalgo and Kearny's Code even extended the protection of property and land use rights as those uses passed from buyer to seller and from generation to generation.

With regard to the people who were induced by the American government to go to the Southwest to make their fortune, Congress and the Presidents promised "liberal grants" of the land. As promised by President Polk:

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[8] Fillmore, Millard, *V Messages and Papers of the Presidents*, 1852. New York, 1879, p. 174.

[9] Fillmore, Millard, *V Messages and Papers of the Presidents*, 1850. New York, 1879, p. 87.

[10] Polk, 1845, supra, pp. 396-397.

> I recommend that the surveyor-general's offices be authorized to be established in New Mexico and California, and provision made for surveying and bringing the public lands into market at the earliest practicable period. In disposing of these lands, recommend that the right of preemption be secured and liberal grants be made to the early emigrants who have settled or may settle upon them [Emphasis added].[11]

In a separate address, President Polk stated:

> That it will ultimately be wise and proper to protect and make liberal grants of land to the patriotic pioneers who amidst privations and dangers lead the way through savage tribes inhabiting the vast wilderness intervening between our frontier settlements and Oregon. and who cultivate and are ever ready to defend the soil, I and fully satisfied. To doubt whether they will obtain such grants as soon as the convention between the United States and Great Britain shall have ceased to exist would be to doubt the justice of Congress.[12]

Along that same line, President Zachary Taylor told Congress in 1849:

> [I recommend] [t]hat commissions be organized by Congress to examine and decide upon the validity of the present subsisting land titles in California and New Mexico, and that provision be made for the establishment of offices of surveyor-general in New Mexico, California, and Oregon and for the surveying and bringing into market public lands in those territories. Those lands, remote in position and difficult to access, ought to be disposed of on terms liberal to all but especially to the early immigrants.[13]

President Fillmore also urged that Congress move swiftly to establish a commission to examine the validity of all the lands claims in New Mexico and California, since he viewed the uncertainty of those claims as retarding the settlement of the country. In his annual address in 1831, he again stressed the need to encourage settlement of the Territories:

> The agricultural lands [of the newly acquired Territories should, however, be surveyed and brought into the market with as little delay as possible, that the titles may become settled and the inhabitants stimulated to make permanent improvements and enter ordinary pursuits of life.[14]

Franklin Pierce followed President Fillmore to the White House. He also believed that agriculture development in the west and southwest was of the utmost importance. He urged that the lands be swiftly and inexpensively sold to those settlers who would develop the lands for agriculture purposes.[15]

President Ulysses Grant continued to encourage the movement west with promises of the acquisition of property:

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[11] ibid.

[12] ibid

[13] Taylor, Zackary, *V Messages and Papers of the Presidents*: 1849. New York, 1897, p. 20.

[14] Fillmore, Millard, *VI Messages and Papers of the Presidents*: 1851. New York, 1897, p. 127.

[15] Pierce, Franklin, *VI Messages and Papers of the Presidents*, 1853. New York, 1897, p. 2749.

> The opinion that the public lands should be regarded chiefly as a source of revenue is no longer maintained. The rapid settlement and successful cultivation of them are now justly considered of more importance to our well-being than is the fund which the sale of them would produce. The remarkable growth and prosperity of our new States and Territories attest to the wisdom of the legislation which invites the settler to secure a permanent home on terms within reach of all. The Pioneer who incurs the dangers and privations of a frontier life, and thus aids in laying the foundation of new commonwealths, renders a signal service to his county and is entitled to its special favor and protection. These laws secure that object and largely promote the general welfare. They should therefore be cherished as a permanent feature of our land system.[16]

While honest settlers and pioneers hastened west turning barren wasteland into productive farms and ranches, other not so honest and productive citizens also ventured west to attempt to make a fast fortune. Such stories of the graft and corruption of land speculators who would move into an area to deplete the timber and other resources then move on without purchasing or replenishing the land so that it would be suitable for use by permanent settlers caused Congress, in 1891, to alter it policies in an attempt to ensure that the honest settler would continue to build the American west. First, Congress permanently repealed the preemption acts and second, Congress added an amendment to the appropriations bill allowing the president to set aside "national Forest lands" or forest reserves.

Protection of the Rights of Livestock Operators Using the Forest Reserves

Even after the creation of the forest reserve system, **the importance of the use of the unclaimed federal lands for livestock grazing was recognized and protected.** As stated in the official annual report of the Secretary of the Interior in 1891, "One striking difficulty in establishing the reservations [forest reserves] themselves may be found in the fact that much of that land that should be reserved is as yet unsurveyed; other parts are subject to prior rights, or are expected to be included in railroad grants."[17]

Although the creation of the forest reserves or national forests had a very rocky start, livestock grazing was always part of the use of those lands. In fact, the Department of the Interior immediately began to adopt policies to protect the rights of livestock operators using the forest reserves. Those policies:

1. Encouraged the rancher to develop improvements to enhance the productivity of the Forest reserves.

2. Allowed title to remain with the Forest Service so that those lands suitable for private settlement would only be taken if such settlement did not interfere with the livestock owners grazing rights.

3. Allowed the states to collect taxes from the use of the federal lands to be used for the development of water resources.

4. Encouraged cooperative projects between the Department of the Interior and the individual livestock producer to better the land for livestock grazing.[18]

The Secretary of the Interior also established rules and regulations to implement the will of Congress in creating the forest reserves and to protect the prior rights of those within the borders of the reserves. The first regulations allowing the continued use of the forest reserves acknowledged the Spanish custom of allowing local ranchers to have first priority for use of the public lands. As described by the Secretary of the Interior in 1902.

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[16] Grant, Ulysses, *IX Messages and Papers of the Presidents*, 1853. New York, 1897, pp. 110-111.

[17] *Department of Agriculture Annual Report to Congress 1891*, Washington: Government Printing Office, p. 226.

[18] *Report of the Secretary of Agriculture, 1891*. Washington, Government Printing Office, 1892.

Applicants for the grazing privilege are given preference in the following order:

> (a) Persons residing within the reserve.
>
> (b) Persons owning ranches within the reserve, but not residing thereon.
>
> (c) Persons living in the vicinity of the reserve owning what may be called neighboring stock.
>
> (d) Persons living at a distance from the reserve who have some equitable claim to use the reserve.
>
> Class (b) under paragraph 16 should not be construed so as to allow large stock owners to obtain the preference therein given, by simply buying or obtaining small ranches inadequate for their business. This will not be tolerated.[19]

Although these regulations initiated a good start in the recognition of the prior rights on the Federal lands, further progress in the recognition of these rights was made during the 1905 Denver meeting between the Forest Service and stockmen. During this meeting, the following report was made:

> The main points of agreement, worked out by the department and stock organizations, emphasized that those already grazing in the forest ranges would be protected in their priority of use [Law of Occupancy and Prior Appropriations Doctrine: that reductions in the number of grazed stock would be imposed only after fair notice; that small owners would have preference over large; that only in rare circumstances would the department seek total exclusion of stock from the forest; and that the policy of use would be maintained wherever it was consistent with intelligent forest management. Finally, some attempt would be made to give stockmen a voice in making the rules and regulations for the management of stock on local ranges through the establishment of forest advisory boards.[20]

In 1906, the above agreement was codified into regulation by the Forest Service "The Use Book." Those regulations permanently allocated grazing on the federal lands in the following manner:

Applicants for grazing permits will be given preference in the following order:

(a) Small nearby owners.
Persons living in or close to the reserve whose stock have regularly grazed upon the reserve range and who are dependent upon its use,

(b) All other regular occupants of the reserve range.
After class- (a) applicants have been provided for, the larger nearby owners will be considered but limited to a number which will not exclude regular occupants whose stock belong or are wintered at a greater distance from the reserve.

(c) Owners of transient stock.

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[19] *Forest Reserve Manual*. Washington: Government Printing Office, 1902.

[20] Hage, Wayne, *Storm Over Rangelands*, Bellevue: Free Enterprise Press, 1989, p. 161; Albert Potter, "Cooperation in Range Management," *American National Cattleman's Association Proceedings*, 16 (1913):55.

> The owners- of stock which belong at a considerable distance from the reserve and have not regularly Occupied the reserve range.
>
> Priority in the occupancy and use of the range and the ownership of improved farming land in or near the reserves will be considered, and the preference will be given to those who have continuously used the range for the longest period.

It was by this system and the recognition of the long-standing use of the federal lands that created the permit and preference right system used by the Forest Service and Bureau of Land Management today.

Equitable Estates for Livestock Grazing on "Federal Lands

After considering the Spanish and Mexican customs and culture as protected by Kearny's Law and the Treaty of Guadalupe Hidalgo, the promises made to the settlers and pioneers by the American presidents and Congress and the efforts made to protect and continue livestock grazing even after the creation of the Forest reserves, the question to be answered by this comprehensive plan is whether those events have legal significance today. The answer to that question is YES.

It follows, if a person follows the law, he has the benefit of the law. The settlers in the New Mexico territories in obeying the local laws and customs, relying on the promises of the U.S. presidents and obeying the rules and regulations required after the creation of the Forest reserves have earned an equitable estate for livestock grazing on public and Federal lands.

An equitable estate is a "right or interest in land, which not having the properties of a legal estate, but merely being a right of which courts of equity will make notice, requires the aid of such court to make it available. These estates consist of uses, trusts and powers."[21] In cases of "conflict" between an equitable right and a legal title, the courts will either suspend the enforcement of the legal title, "or decree that it [the legal title] shall be considered as held in trust for the benefit of the one having the equitable title. If equities are made out, the court will always require them to be satisfied before the legal title will be enforced."[22] [Emphasis added]. Actions to protect incorporeal rights are also within the jurisdiction of the equity court.[23] Equitable estate, according to Noah Webster's 1828 American Dictionary of the English Language, is "...The estate or interest of one who has a beneficial right in property, the legal ownership of which is vested in another..."

There are numerous reasons that the equitable estate in the federal lands created by Catron County's custom and culture, recognized by the presidents and Congress and originally protected and recognizably the U.S. Forest Service and Bureau of Land Management should remain in full force and effect today.

1. Livestock grazing on the unclaimed or federal lands is protected under Kearny's Code and the Treaty of Guadalupe Hidalgo. As described above, it was by Spanish and Mexican custom that a person grazing the unclaimed lands earned an equitable estate in that land. The extent or size of the equitable estate was determined by the amount of water owned by the settler. "A territorial statute of 15 February 1887 limited the cattle on a given range to the number which could be watered."[24]

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[21] *Bouvier's Law Dictionary*, p. 530, (1st. Ed. 1868).

[22] 27 *Am. Jur. Equity* § 64 (1966).

[23] Ibid.

[24] Clark, Ira G., *Water in New Mexico*, Albuquerque: University of New Mexico Press, 1987, p. 147. (*NM Territorial Laws of 1889*, Ch. 61, pp. 126-27).

2. The original Forest Service regulations sanctioning livestock grazing on the federal lands recognized and protected the grazer's right to use the federal lands. As stated above, only those livestock operators who could prove a prior use of the unclaimed lands, who had adequate water rights or "commensurate property" and who lived in or near the federal lands could acquire a grazing permit. The fact that those grazing permits were originally taxed as private property further illustrates the Forest Service original intent of protecting livestock grazing on the forest reserves.

3. Even today, the Forest Service and the U.S. Army recognize the monetary value of a grazing permit. This is evidenced with the purchase of the Glenn Allotment by the New Mexico Department of Game & Fish and the condemnation proceedings by the U.S. Army when it acquired the grazing rights and the non-federal lands within the McGregor Range in southern New Mexico. The value placed on the Glenn Allotment was determined by the Forest Service. This documentation can be referenced in the Glenn Allotment file, Gila National Forest. The McGregor Range history is documented in a 1977 report from the Secretary of the Interior and the Secretary of Agriculture.[25]

4. The Internal Revenue Service (IRS) also recognizes a grazing permit on federal lands as a property right. In Shufflebarger v. Internal Revenue Service, 24 T.C. 980 (1955), the Court held:

> That the grazing of livestock on national forests is to be regarded as a substantial, well-established, and indefinitely continuing part of the national forests program, is not, according to our reading of the grazing regulations and the Forest Service Manual, open to question,... It seems to us abundantly clear that the statute and regulations contemplate that once the right to a fair and just allotment of grazing land has been acquired under the established procedures, that right, subject to some adjustment if it should become necessary for the protection of the range or for a more equitable distribution among preference holders, is to be regarded as an indefinitely continuing right, [emphasis added]

As determined by the IRS, that "indefinitely continuing right" is taxed upon the death of the owner for the fair market value of the permit. That value is based on the "animal unit" numbers or carrying capacity of the permit which is usually one third (1/3) of the value of the deeded lands.[26]

Equitable estates on federal lands are taxed by some of the western states. In California, grazing permits were recognized as equitable property rights in 1850, and are now taxed accordingly.

Summary-Federal Land Grazing Permits are an Equitable Estate.

Therefore, based on the customs and cultures of the people, the promises of the presidents. the historical agreements made with the United States Forest Service, and the value of grazing permits as recognized by the Forest Service itself, the Internal Revenue Service and by some states, Catron County hereby recognizes that those federal land grazing permits acquired under proper authority to be an "equitable estate." "As such, these property rights shall have the Full protection of the Fifth and Fourteenth Amendments to the U.S. Constitution.

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[25] "McGregor Range History", *Study of Fees from Grazing Livestock on Federal Lands*, A Report from the secretary of the Interior and The Secretary of Agriculture, Appendix C, Part 3(a), October 21, 1977.

[26] IRS letter of July 31, 1990 to Dick Manning, rancher, IRS letter of August 25, 1988 to R.B. Tippeconnic, U.S. Forest Service; IRS letter of September 30, 1983 to Robert Hadley.

A BRIEF HISTORY OF THE CUSTOM AND CULTURE OF CHAVES COUNTY, NEW MEXICO

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With the vast majority of the land in Chaves County not subject to irrigation for growing cultivated crops, it was perhaps inevitable that grazing would be the dominant agricultural activity in the area. The grazing of beef cattle provided the original economic base for the county and continues to constitute a major portion of the present-day economy.

The grazing business in the Pecos Valley started in the mid-1860's, when James Patterson and a few others worked cattle in the area. Also, Hispanic sheepherders lived along the Rio Berrendo. The documented history, however, starts with the blazing of the Goodnight-Loving Trail in 1866 by Charles Goodnight and Oliver Loving. At the invitation of beef contractors, they brought Texas longhorns to sell to the Federal Government for Navajo and Mescalero Apache Indians at the Bosque Redondo Reservation and for soldiers at Fort Sumner who guarded the reservation.

With later cattle drives, the Goodnight-Loving Trail was extended northward until it reached Denver and even Cheyenne. Goodnight found markets for his cattle not only at Indian reservations and Army posts, but also at mining camps and wherever cattlemen wanted to stock the ranges and start raising cattle. Loving died rather early in the operation.

In 1867, John S. Chisum, already a big operator in Texas, brought in his first herd. He and Goodnight entered into a partnership, which lasted from 1868 until 1871. Chisum's crews would round up the cattle in Texas and drive them to Bosque Grande on the Pecos, about 35 miles north of present Roswell, where Goodnight's crews would take over and deliver the herds to market. The men would then split the profits.

When John Chisum brought herds through present Chaves County, he picked out all of the best heifers and kept them to stock the range for about 150 miles from Fort Sumner south to the Texas line. He became a permanent resident of New Mexico in 1872, with his headquarters at Bosque Grande. In 1875, he moved to the head of the South Spring River a few miles southeast of Roswell, where he established the South Spring River Ranch. By that time, he was beginning to upgrade the quality of his cattle by importing registered Durham bulls. Estimates of his herds in the mid-1870's are as high as 80,000 head, which made Chisum the largest cattle producer in the United States at the time.

Chisum trail herds left the Pecos Valley year around, mostly for Indian reservations in Arizona Territory. After the railroad reached Las Vegas, N.M., in 1879, cattle could be trailed there for shipping. It was not until 1894 that the railroad was built to Roswell, and then it came from the south the wrong direction for efficient marketing of cattle. That problem was finally resolved when the railroad was extended to Amarillo in 1899 and connected with major lines.

In the early 1880's, J.P. white established the LFD Ranch at Bosque Grande and served as manager and partner with his uncle, Texas cattle baron George W. Littlefield. Soon many other cattle ranches were started in the area. Major cattle operations included the Cass Land and Cattle Co., which established a ranch in 1884 that came to be known after 1889 as the Bar V; it was located in the Cedar Canyon area, some 60 miles northeast of Roswell. On the Penasco, about 75 miles southwest of Roswell, the Champion Cattle Co., initiated the CA Bar

Ranch in 1885. The Diamond A Ranch on the Rio Hondo west of Roswell was an early ranch. Capt. J. C. Lea started the LEA Ranch northwest of Roswell in the 1880's; he brought the first sheep to the area in 1877.

Much of the early sheep raising in Chaves County was carried on by itinerant sheepmen who caused conflict with cattle ranchers in the 1880's by grazing their sheep on the public domain and watering them at private sources. As a result of overgrazing, a law was passed that required the flocks to move at least six miles per day. This helped some, but there were uncooperative sheepmen that would graze out three miles on one side of a stream, cross over and graze out three miles on the other side -- thus obeying the letter of the law. As a stabilized business, sheep raising in the Chaves County area traces from 1880 when J.M. Miller bought his first flock and established a ranch. Sheep ranchers began to improve the quality of their stock by bringing in fine breeding stock from the eastern U.S.

Ranches raising cattle, sheep, or both soon proliferated until they were too numerous to mention. One operation that should be acknowledged, however, was Slaughter's Hereford Home on the eastern outskirts of Roswell. Col. C.C. Slaughter, one of the largest of the Texas cattlemen, established a breeding operation around the turn of the century. Some of the most famous Hereford bulls in the world were located there, and they attracted cattle producers and livestock writers from far and near.

In the early years of the cattle grazing industry in Chaves County, the accepted practice was "open-range ranching" without fences. Each ranch owned or leased its own land, but cattle were allowed to range far over the public lands in the Pecos Valley. Cooperative roundups, typical of the West, were conducted a couple of times each year so the individual ranches could process or sell their stock. The first drift fences in the area were built in the early 1890's; but when government inspectors discovered that the fences were on federal land, they ordered their removal. Some fences could still be found, however, under the pretext of fencing public roads.

The livestock industry in Chaves County grew along with the population and economy. Like other grazing areas, it was affected by the blizzard of 1887, the Panic of 1893, the two world wars, the Great Depression, and other developments outside the area. In addition to cattle and sheep, mohair-producing Angora goats were brought in by some ranchers. An important national event that had a lot of local consequences was the passage of the Taylor Grazing Act of 1934. This law required ranchers to identify their boundaries and to erect drift fences, so there was much fence-building over the next twenty years. With fences, ranchers soon realized they would have to drill wells to provide water for their animals; the Taylor Act therefore resulted in a boom in water-well drilling. The fenced ranches not only made it possible to improve the quality and health of the livestock, but there was a similar improvement in the wildlife and in the range itself.

In the long run, grazing in the county prospered. For example, during the World War II era, the wool warehouses in Roswell shipped three to five million pounds of wool per year; State totals showed that the value of sheep and mohair exceeded the value of cattle. Chaves County became the leading county in New Mexico in sheep and wool production and one of the top counties for mohair and beef cattle production. Some of the world's best award-winning wool and mohair are produced in Chaves County. The advent of plastic pipe in the 1960's made it possible for ranchers to provide water sources for their livestock about every mile, making it unnecessary for the cattle and sheep to walk long distances to find water. Beef cattle grazing was complemented in the early 1900's by a few stock farms, in the 1960's and 1970's by several feedlots, and in the 1980's and 1990's by numerous dairies.

The production of sheep, wool, mohair, and grass-fed beef continue as mainstays of the economy of Chaves County, demonstrating that grazing - the original basis for the development of the area -- is still a major factor today in the economy and culture of the county. The array of businesses in Roswell and the area that cater to ranchers is some indication of the importance of ranching: livestock-trucking firms, veterinarians, ranch supply stores, wool/mohair warehouses, sales rings, etc. Sheep and cattle producers' organizations are also quite active in the Pecos Valley.

Continued demand for the products of the range ensures that grazing will continue to be the principal, most efficient use of the semi-arid lands of Chaves County. Ranch hands in the 1990's may ride the range in pickup trucks or all-terrain vehicles (ATV) addition to or instead of horses; ranchers may market their livestock via video-tapes over satellite television channels and other innovative techniques; but the basic functions of livestock production today remain substantially the same as they have been for many decades.

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CURRY COUNTY
CUSTOM AND CULTURE

Curry County

Curry County was carved from Roosevelt and Quay Counties in 1909. The forty by forty five mile stretch of land is a vast expanse of land that has become an agricultural oasis due to its underground water supply.

Cowmen became the first permanent settlers in present Curry County during the 1880's. The first influx of homesteaders started between 1901 and 1903 with the construction of the Belen cut-off by the Santa Fe Railroad in Curry County. The 250 mile-long rail line connect the Pecos Valley with the Northeast and enabled heavy freight trains to avoid the steep mountain grades of northern New Mexico. The railroad located its division point at Riley Switch, nine miles west of Texico. The Santa Fe Railroad had considered several other sites for the division point: Texico, the first town in present Curry County, Melrose, founded in 1906; Blacktower, also founded in 1916. Construction began on a roundhouse in Melrose but was terminated when a new Chief Engineer for the railroad decided that the new townsite of Clovis had better water and more reasonably priced land.

During the last territorial legislature assembly in 1909, House Bill No. 5 was presented. It proposed the creation of Curry County. Charles Scheurich, a resident of Clovis and a supporter of creating a separate county, went to Santa Fe to garner support for the creation of a new county. Through negotiations with senators from Roosevelt and Quay counties the boundaries of the new county were developed. The senator from Roosevelt County did not want to give up all the Santa Fe Railroad taxes on land through his county so he asked for about an eighteen mile stretch on the west. Hence, Roosevelt County now has a narrow panhandle in its Northwestern corner in which the Santa Fe Railroad passes. On the north, the senator had several communities which had always given him political support and he didn't want to give up those communities to a new county. That is the reason that the northern boundary is shaped like a stairstep. The creation of a new county received support from the Governor when Scheurich assured the Governor that the county would be named for him, Curry.

Curry County grew steadily from 1909 to 1949 as people continued to move to the area due to the railroad as well as the farming opportunities in the area. The second period of growth for the county began in early 1950s with the introduction of deep well irrigation and the reactivation of a World War II airfield located west of Clovis. Cannon Air Force Base was reactivated in 1951 due to the Korean conflict and became part of the Air Force's Tactical Air Command. Cannon has become an important part of the economic growth of Curry County. It contributes more than $50,000,000 annually to the local economy and one third the population of Curry County is comprised of military personnel and dependents.

The cattle industry, the county's first industry, continues to be an important source of revenue and 395,000 acres of rangeland and wheat pasture are still used for cattle. Agriculture contributes over $30,000,000 to the county's economy and has undergone massive changes since the 1950's. The railroad also continues to be a viable part of the economy with approximately 775 employees and contributes approximately $12,000,000 annually to the economy. The economy of Curry County continues to be stable and diversified.

The History of Curry County continues to play an important role in the economy. Those industries that were the cause of the creation of the county have endured.

The future economic development of the community will continue to depend upon agriculture, ranching and the development of new industry. Key to bringing in new industry will be the Clovis Community college. Learning institutions bring a vast array of opportunities to any community. The future of Curry County rests on the future generation that find challenge and opportunity in Curry County.

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EDDY COUNTY
CUSTOM AND CULTURE

EDDY COUNTY

CUSTOM & CULTURE

Eddy County is located near the southeast corner of the state boarding Texas on the south. The Pecos River crosses the county from North to South and enters Texas at the lowest elevation in New Mexico, south of Carlsbad. The River has been dammed at several points in the county forming various reservoirs and lakes. Irrigation land (75,000 acres) in the Pecos Valley produces hay, cotton, chili and pecans but most of the county is semiarid brush and grassland suitable for cattle and sheep ranching. Mining of potash, oil and gas provides a significant source of income in the county.

Carlsbad is the most populous community and the county seat. The second largest city is Artesia. The Village of Loving is located in south Eddy County, to the southeast of Carlsbad and is a farming, ranching, and residential community. The Village of Hope is located in north Eddy County to the west of Artesia and is an agricultural community.

Four historic trails follow the Pecos River through Eddy County. The earliest of those is one blazed by the Spaniards in 1536. Apache Indians lived in the region at that time, and they found abundant game in the mountains and on the plains and many kinds of fish in the rivers. The Guadalupe mountains were where many of the Apache Indians were located at that time.

The Guadalupe Mountains are the southernmost extension of the Rocky Mountain range. Today, with a few exceptions, the entire area is part of the Guadalupe District of the Lincoln National Forest. There are many families engaged in the ranching industry in the southern Guadalupe Mountains.

In 1866 cattlemen found a virgin grassland lying westward between the Pecos and the highlands. The largest numbers of settlers arrived in the 1880's and 1890's. The county was organized in 1889 from a part of Lincoln County. Carlsbad was made the county seat in 1890.

In 1887 two brothers, by the name of Eddy, who had a ranch in the area of today's Carlsbad had found both funding and a place take a small ditch from the deeply cut Pecos. They and their ever increasing circle of partners soon extended both their plans and their dreams until they were attempting to bring ditch water to two hundred thousand acres along a hundred mile stretch of the river lying south from Roswell. It was the largest irrigation project that had ever been attempted in the United State. It relied on several dams and canal systems that were designed and created by the West's corps of railroad engineers since irrigation engineering did not exist yet.

In the late 1890's, after years of ups and downs with irrigated farming, ranching, again became for twenty years, the major economic support for the Pecos Valley, and the local economy swung with the frequent ups and downs of cattle and sheep prices. By this time, however, the successful drilling of stock wells had added the plains to the east as an additional large ranching area.

By 1903 guano was being taken from one tunnel of Bat Cave, today's Carlsbad Caverns. The claim would later be made that one hundred thousand tons were removed there. Most of the material was shipped to Arizona and California for use in the citrus groves. One of the guano miners was the Jim White who is credited with exploration of the scenic areas of the Bat Cave. In 1923, when the federal government declared the cave a national monument, it was a major coup for Carlsbad and Eddy County that the official name was shifted from Bat Cave to Carlsbad Cave and latter to Carlsbad Caverns. Tourism began to emerge as an additional mainstay in the local economy.

There is an eighty year history in the county of development of mineral resources. Oil was first discovered in today's Eddy County in 1913. Across the decades, the oil and natural gas extraction industries shifted through cycles of greatest and lesser expansion, having grown to be a more and more important part of the economy. In 1925 a group that was exploring for oil discovered, instead the county's major potash deposits thirty miles east of Carlsbad. Potash has been a major source of funds for this county ever since. The more recent sulfur development south of Eddy County in Texas has also brought economic benefit to this area.

Carlsbad got its first major taste at the federal feed trough during World War II when an army airbase and bombardiers school were located on the southern outskirts of town. In the 1950's the federal government returned to the area to sink Project Gnome into the vast salt beds that underlie this part of the Permian Basin. The first major project in America's pursuit of peacetime uses for atomic energy, the 1961 detonation produced a ruptured chamber that left all of the planned experiments undone.

By the 1970's the federal government was again searching for a deep salt bed. Carlsbad launched a major effort to attract the Waste Isolation Pilot Project (WIPP) program a national radioactive waste depository, at about the same time county, state and federal officials were in Washington attempting to get federal construction of Brantley Dam on the Pecos River between Carlsbad and Artesia. Both efforts were successful. Carlsbad also boasts being the home of a state zoological and botanical garden, the Living Desert State Park. The recent discovery of the huge Lechuguilla Cave system immediately adjacent to Carlsbad Caverns is said to be even more spectacular than Carlsbad Caverns. So far, Lechuguilla Cave does not appear capable of development for public access.

Like Carlsbad, Artesia's history is rich in discovery. With the completion of the Pecos Valley Railroad in 1894, Artesia's first given name was Miller's Siding. The community had yet another name change when promoter Baldwin Stegman settled in Miller's Siding and married the famous cattleman John Chisum's niece Sallie Roberts. Together they established a post office, naming the town Stegman.

In 1903, the town adopted a new name, Artesia for it's Artesian wells. That same year, the Artesia Townsite company joined with the Artesia Improvement Company to drill the first Artesian well in the community. By November, a well 830 feet deep with a six inch casing was completed three miles outside of town making it the world's largest Artesian well at that time. The age of the big water well had come and each week saw a new well surpassing the last. From 1905 to 1907, the ample water for irrigation brought over 1,200 people to area farms.

1923-a record year for Artesia when two men from Robinson, Illinois hearing of the oil traces in the Artesian wells, brought a steam powered cable tool rig to drill for oil. After several dry holes, the oilmen were ready to pack up their drilling rig when Martin Yates II acquired state leases east of the Pecos River. Yates talked the two into drilling one more well which was more promising. The next well was gas, while not marketable then, supplied energy for equipment on future wells. By April of 1924, the company brought in well Illinois No. 3 which was the first producing well in New Mexico and the third in the oil-rich Permian Basin.

The next four decades were a period of steady growth for Artesia. Its agriculture production flourished with the ample water supply and great soil conditions. Oil and gas production and processing helped to meet the needs of an energy-hungry world.

Artesia lies within the heart of the Pecos basin with 45,000 of the counties 75,000 total acres of irrigated lands. Navajo Refining is one of the largest independent refinery's in the United States. Because of the discovery of gas in 1923, Artesia is also the headquarters for Yates Petroleum Corporation, also one of the largest independent oil and gas companies in New Mexico and the United States. The Federal Law Enforcement Training Center is a large training center for all branches of law enforcement from all over the United States.

Artesia Alfalfa Growers Association is the largest agriculture cooperative in New Mexico. Dairies and chile processing plants are also important economic components of Artesia and Eddy County.

Eddy County was built by people with dreams, courage and vision. The same still holds true today. Eddy County is rich in history, natural resources and it's people. Agriculture, ranching and farming, founded Eddy County. Today those industries are still the anchor of the County along with the many other invaluable natural resources, and ever expanding industries.

GRANT COUNTY
CUSTOM AND CULTURE

GRANT COUNTY

CULTURAL AND HISTORICAL PREFACE

Grant County was created by the New Mexico Territorial legislature, January 30, 1868. The territory was taken from the western portion of Dona Ana County and was formerly part of the Republic of Mexico. The culture of Grant County has been influenced by both Mexico and the United States as reflected by the two languages that are widely spoken throughout the County-Spanish and English - and by cultures of the Native American peoples who populated the area prior to European settlement.

The area of New Mexico that became Grant County was home to ancient people for-thousands of years before historical records were kept. The Mogollon Culture which occupied the Mimbres Valley perhaps as early as 300 B.C. was the forerunner of the Mimbres Culture which flourished in the area for hundreds of years around 1000 A.D.

By the time Spanish explorers from Mexico reached the area in the 17th century, it was the homeland of nomadic Apache tribes. The fiercely independent Apache resisted settlement and fought to defend their homeland, first from the Spanish, and then the Mexicans, and later the Americans. Because of their familiarity with their natural environment and adaptability to use European weapons, the Apache slowed or stopped Mexican and American expansion until the late 1800's in the area that would later become Grant County. Although a settlement was established at Santa Rita in 1800, and Fort Bayard, Fort West, and Fort Mobane were built to protect the miners and pioneers from attack, the Apache remained a threat, even after permanent settlements were established at Pinas Altos, on the Mimbres at San Lorenzo, and in 1870 at La Cienega de San Vicente, which later became Silver City.

In 1879, Victorio, Chief of the Chihinne Apache, accompanied by his sister, Lozen, who the Apache believed to have the power to determine the precise location of the enemy, began a series of violent and successful raids that reportedly led to the death of 300 Mexican and American settlers within a 150 mile radius of Silver City.

In 1883, Judge McComas, a Grant County Commissioner, and his wife fell victim to the Apaches, while their young son Charlie was abducted. The massacre of the Marques family - father, mother, and three children - and further raids throughout the County, prompted the Grant County Commission to offer a $250 reward for each Apache scalp in 1886. A $500 bounty was offered for the scalp of Geronimo.

While the Apaches and the newcomers were often merciless toward each other, they sometimes spared the lives of children who were taken captive. Thirteen-year old Jimmy (Santiago) McKin was abducted from his home on the Mimbres by Geronimo and held seven months before being released to his father. Child abduction was not limited to the Apache. Mangas, the only son of the great Apache chief, Mangas Coloradas, was abducted by Anglos during the fight in which John Bullard was killed. After four years of living with various Anglo families in Grant County, the young chief was returned to the Apache where he became, like Geronimo, one of the strongest Apache leaders, completely dedicated to his people.

Indians were far from the only danger the early settlers faced. Life was hazardous; mining accidents and murder were common. Pine Cienega and the area around Mule Creek were home to a notorious band--of cattle rustlers, -- The Upper Mimbres was the headquarters for a band of Mexican cattle rustlers who reportedly robbed the Georgetown stage of a thousand dollars in cash. - The leader of the band, Pilar Perez, abducted a sixteen-year old girl, Petra Parra, after shooting a deputy sheriff. Petra testified against - Perez when he was captured,- - and then eloped with one Francisco Lara from Pinos Altos soon after marrying another man.

Tales of romance and adventure abound in Grant County. Henry McCarty lived for a time in Silver City where he was put in jail for robbing a Chinese laundry - the first in a career of crimes. Escaping through a chimney of the jail, McCarty left Grant County and went on to become a legend as Billy the Kid.

The Chinese, who served as cooks and launderers for the miners, formed a substantial community around Texas and Yankie streets in Silver City and farmed vegetables on a flat south of town known as Chinese gardens; while in Pinos Altos they occupied dugouts in the gulches around town. By 1879, the newspapers reported various opium dens operating all over Silver City and Pinos Altos.

The mining towns of Grant County were quite lively, filled-with saloons, gambling, and bordellos. At one time, there were nine saloons in Central and numerous "houses of ill repute" which served the soldiers of Fort Bayard. Kate W. Stewart emerged as an early leader among the women of "easy Virtue" in Silver City. The Silver City Enterprise reported that "there is no other town in the west where this class of humanity are shown as much liberty as in Silver City." Stewart's Texas St. house passed into the hands of Bessie Harper, who was destined to become a Silver City institution as was her successor, Mildred Cusey, who operated out of a building known as "Millie's" located at the site of the current Silver City Post office.

Much of the frontier spirit of Grant County still remains. The people of Grant County have always been determined to survive and maintain their way of life in spite of many obstacles, including the depletion of mineral ore and the eventual closure of most of the mines in Grant County. The independent nature of the County was evident in the "Grant County Rebellion". In 1876, the entire county threatened to secede from New Mexico and join Arizona, going as far as to frame their own "Declaration of Independence". While the "Rebellion" was unsuccessful, it brought new respect to Grant County from the northern "Santa Fe Ring", and a bill was passed that not only incorporated Silver City, giving the town such special privileges as assessing and collecting taxes, but it also granted the town the power to establish schools, which led to the formation of the first independent public school district in the territory.

More recently, the spirit of independence was exhibited by more than 100 miners and their wives who went on strike against the Empire Zinc Mine in Hanover on October 17, 1950, for equality in wages and benefits, and equality on the job. After the union was prevented from picketing by a Taft-Hartley injunction, the women and children took over the picket lines and refused to back down even after they had been incarcerate. The Empire Zinc Strike has become an inspiration for people everywhere who struggle for justice and equality.

From the earliest times in Grant County, strong, capable leaders have emerged to uphold the values and viewpoints of their people. - Mangas Coloradas and Cochise are two Apache chiefs who refused to be removed to a reservation, preferring to die in freedom than to live in captivity. N.Y. Ancheta was a successful merchant in Pinos Altos before he moved to the Mimbres where he established merchandising, milling, and ranching enterprises that were essential to the growth of San Lorenzo and San Juan. Elizabeth Warren owned and operated many successful businesses in Silver City. She hired M.R. Koehler, another woman, as the foreman for her contracting business. Dressed in their culottes and men's work shoes, Mrs. Warren and Miss Koehler were often seen on the streets showing their work crew of men how to pour cement. Rebecca Brewer, an African-American woman employed by Mrs. Warren as a concrete worker, owned virtually the entire east side of Silver City at one time. One of the more prominent citizens of Grant County, Mrs. Brewer was an acknowledged "curandera", or healer, and also a jailer. She was reported to be 104 years old at the time of her death in 1970.

Agriculture

Agriculture has been crucial to the residents of Grant County from the time when the Indians of the Mogollon

Culture cultivated crops in the fertile flood plain of the Mimbres Valley, and hunted in the surrounding hills. The Mimbres Valley has continued to be the center of agricultural production in Grant County.

During the latter part of the 19th century, the Mimbres was heavily farmed in food crops such as corn, potatoes, and vegetables, with hay and alfalfa grown for livestock. Although fruit crops, such as apples, peaches and grapes were first planted in the 1870s, large commercial orchards of several thousand trees each were begun in the 1880s and 1890s. During the 1920s large scale apple production was initiated in the valley by Grover McSherry of Faywood. The agricultural census figures estimate that there were 4,575 acres of improved farm land, comprising 68 farms in Grant County in 1880, reaching a peak in 1920 of 545 farms on 31,230 acres of farmland.

Apparently, the first purebred cattle were brought to Silver City from Missouri in the early 1870s by Harvey H. Whitehill. Starting with 15 Durham cows and 1 bull, Whitehill built up his - herd to 1,060 head within 10 years. Richard Hudson ran about 600 head of cattle near his Hot Springs resort in the late 1870s. Hudson later became a leading member of several Territorial cattlemen's associations. On January 15, 1881, the Southwest Stockmen's Association was formed in Silver City to protect the stock of the membership, to curtail rustling, and to lobby for legislation beneficial to the industry.

Cattle companies formed and bought up large tracts of land to run their cattle on the open range. There were the Oak Grove Live Stock. Cuchillo Cattle, Old and New Mexican Ranch and Cattle and San Simon companies, all incorporated in the mid-1880s. Around 1883 Arron and Marion Lasater drove 2,000 head of cattle from Texas to the Big Gallinas near Sherman where they established the NAN Ranch. By 1890, when they incorporated as the Victorio Land and Cattle Company, the group held most of the watering places between Silver City and the Mexican border.

The 1870s and 1880s was the era of the cattle baron, of which there is no better example than Tom Lyons. The L/C Ranch rose through the efforts of Lyons and Angus Campbell. The pair began to acquire land in the early 1880s for stockraising, starting with the Nogales Ranch on Duck Creek. By 1885 they had purchased 19 ranches on the Gila, and within five years owned "all the range from the mouth of Duck Creek to above Mule Springs, on both sides of the Gila, and every waterhole and meadow within a day's ride."

Undoubtedly, the L/C Ranch was one of the truly great ranches of the West. At its height in the 1890s, Lyons controlled a million acre range carrying 60,000 head. Lyons dreamed of an operation that would make Grant County the biggest cattle market west of Kansas City. Lyons and Campbell improved methods of ranching and cattle breeding throughout Grant County. While Campbell developed extensive feed and water systems, complete with dams, reservoirs, and water tanks to irrigate acreage for food for both cattle and employees, Lyons set up wide-ranging distribution systems with commission houses, finishing pastures, and slaughter-houses in Denver and Los Angeles.

The L/C continued to be expanded until it resembled a self-sustaining feudal principality. The ranch employed 100 wagons, 750 riding horses, 400 work horses, 75 cowboys in season and 3-6 chuck wagons. The farming operations employed 100 Mexican families, most of whom came from Chihuahua. Being people of culture, Lyons and his wife had a well-stocked library, and held music and lavish entertainment at their ranch headquarters, which became a mecca for the famous and wealthy.

The 1880s witnessed a gradual transformation of the ranching industry from open range, with large unfenced expanses of land held through the Strategic ownership of water sources in the area, to the era of fixed ranches with fenced pastures owned or leased by companies. By the turn of the century, the industry was forced to reorganize on a smaller, more efficient scale. Grant County continued to lead the region in cattle production with some 198,519 head reported by the 1910 census.

As the population of Grant County grew, the amount of acreage used for agriculture decreased. In Grant County today, there are 842,969 acres of deeded land in grazing, 2,721 acres of cultivated land, 200 acres of orchards, and 362 acres of vineyards. There is an estimated 55,000 head of cattle. The major crops continue to be alfalfa and apples.

HIDALGO COUNTY
CUSTOM AND CULTURE

Summary of the CUSTOM & CULTURE of the People of Hidalgo County

By: Parsifal Smith, Department of Cultural Studies, University of Arizona, Tucson, Arizona

Hidalgo County in southwestern New Mexico seems typical for this part of the Southwest: small communities tucked into the vast desert and oak-crowned hills, farms and ranches marking the little spots of human habitation outside the small towns. But the quiet of Hidalgo County, like other counties in America's rural west, belies the struggles taking place over the lands these peoples reside within. It is primarily a question of power and a response of resistance; a struggle between rural and urban values and, for many of the people in Hidalgo County, a question of freedom. All of this centers upon the land-- land that means a great many things to a great many people -- forming self and community identities in the same way the wind and rain and sun formed the lands that inspire the world to reach for their own piece of New Mexico's landscape. Through all of this --because all of this -- a picture of the cultures and lifeways within Hidalgo County articulate themselves in the resistance emerging from the complex gathering of desires. It is these lifeways and the cultures they have built that I strive to articulate through the voices of the residents in Hidalgo County, hoping that from a recognition of the customs and traditions inherent and inspired by the lifeways in Hidalgo County, any decisions made about the fate and direction of the land and people in Hidalgo County will keep foremost the desires of the peoples who live here now, for it is their lives that will surely be affected most.

People and the Concept of Place:

Whenever you sit down and talk with the people living in Hidalgo County you're likely to hear the word place come up in the conversation. On one hand, place can mean something very simple, a common reference to a certain space, nothing more or less. On the other hand, place is recognized by social scientists to express a person's relationship to home, community, and the land that surrounds them -- especially in rural areas like Hidalgo. Place, like landscape, is the:

> whole complex of cultural response such as memory, experience, values, evaluation, and judgment [which] are present in the processes of cognition with the result being a construction of environment which is perhaps analogous to a map of a landscape: a representation but not the terrain itself.[27]

In other words, place holds a very personal, emotional and even spiritual meaning for people when they use the word in the context of the conversations recorded here in a cultural study of Hidalgo County. Place is inseparable from the person's own sense of self as well. The history of place being the history of a person: the site marking, creating, and encouraging his or her identity that, in turn, is transferred to and transforms into the identity and values of their community. Place, then, when used by the peoples I speak with in this study, should be recognized as an expression in many ways of the very heart, or essence of their lives. That is, not only will the word be pointing to specific geographic sites and features, but also to convey for these people a deep sense of commitment: of history, of complex cultural and family ties to the land they work with, the structures they call home. The communities they live within, and the ecology that has written the nature of their being inexorably into the land. It is for that reason that Daniel Kemmis, author and mayor of Missoula, Montana, suggests that for areas like Hidalgo County, there is:

> perhaps no better way to get a sense of what this place is than to ask why it (and not someplace else)

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[27] I.G. Simmons. Interpreting Nature: Cultural Constructions of the environment (London & New York: Routledge, 1993), 76.

> became the last of that old frontier. There were good reasons that this dry, windy, cold, hot, remote region was so late in being settled. Those features still keep the region largely unpopulated. This in turn, preserves the sense that the land is dominant here - that this is a place of more land than people. It seems to come natural, then, that people tend to define themselves in terms of the land that surrounds them.[28]

There is a strong sense of the land in Hidalgo County, visibly worn into the features and words of the people here, whose small towns huddle in the midst of an ever present horizon and endless sky. It is this, sometimes overwhelming stretch of land that at once isolates and connects the people and towns to one another, forming throughout as a community of rural interest and rural values. In many ways, perhaps at the most fundamental level, values and the way people respond to differing values from their own, is a the crux of many of the problems counties like Hidalgo are confronting throughout the rural West. It is likely that very little will be achieved by such a study if an interested parties do not deal first with the issues of differing value-systems as well as understanding that the different values are not a result of generation alone, but of a new mind-set brought to rural areas from urban influences. As J. Kennedy explains, underlying:

> all this socio-political change is the shift in public land values of an American industrial nation that emerged from WWII to become an urban, post-industrial society in the 1970's. Much of the American public hold environmentally-oriented public land values today, versus the commodity and community economic development orientation of the earlier conservation era (1900- 1969).[29]

This is not suggest that the difference between rural and urban values is a generational one. People in general in Hidalgo, regardless of age, share the same outlook on the land and their relationship to it. Hidalgo, like most of rural America, aligns closely with the "earlier conservation era:" finding value in things like home, family, community -- those ideals that our urban residents are struggling mightily to regain. And it is these ideals that separate urban from rural identity for most of the people in Hidalgo. Residents of Hidalgo often remarked on this, with statements like:

> the values are different here -- that's why we moved here from California: the values are different from those in big towns. We're more family oriented.

The difference in values-systems between rural and urban peoples is recognized just as readily by those people Wallace Stegner calls "stickers"[30] people who have lived most or all of their lives in Hidalgo, sharing a sense of place and a connection with their community, enduring thick and thin to build a home for themselves and a place for others to come after them and continue the values that have made their communities strong. All of which begins with a history, a connection to a site through self and personal relations -- things that begin to imbue geography with history; turning land into landscape, site into place, peoples into communities. The kinds of people who have built what J. Kennedy calls.

> a region where family farms and a small-town, rural way of life have long been central to the resident's sense of identity and their vision of a good life.[31]

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[28] This is taken for Daniel Kemmis' work Community and the Politics of Place, published by the University Of Oklahoma Press, 1990 (p 41). And although Kemmis is referring to the area in Montana, the sense of people and land and the last frontier are just as fitting to Hidalgo County.

[29] J.J. Kennedy, "Changing Social Values and Images of Public Rangeland Management" in Rangelands 17(4) August 1995.

[30] Wallace Stegner, The American West as Living Space (Ann Arbor: University of Michigan Press, 1987).

[31] Kemmis, 39.

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It is this "vision of a good life" in which residents of Hidalgo share a well-formed sense of community -- a sense of their neighbors lives being closely connected to their own, and inspiring comments like:

> we have our own little Utopia down here... it's a small, tight-knit community where everyone belongs.

This is a strong statement, but not an isolated one. People in Hidalgo extend themselves to create a place where "everyone belongs" because it is central to the way in which people in Hidalgo County form their own sense of self and how, most often, they develop the values they carry with them throughout their life. The words above were echoed throughout my interviews with residents of the county as families and friends maintain close contact through the place "where everyone belongs" -- a place that nurtures, protects, and maintains the values and traditions that the lifeways have developed among the people here.

Americans, wherever they live, tend to regard rural people as honest, hard-working, self-reliant, and law-abiding individuals for whom the land is the generator of generations, valued for its beauty as well as for what it produces. Values most of us are familiar with and to which our nation's leaders so repetitively evoke to their own characters, can be found in abundance in the vast majority of the people one meets in Hidalgo County. It is not imposed nor affected, it merely rests on people's shoulders here like the guardian of our nation's fundamental values where, as William Cronon writes, it:

> continues to this day as a key element in the mythology and idealogy of American nationalism...where many Americans continue to locate a central core of their identity. The meaning of heroism, the relation of the individual to family and community the nature of patriotism, the value of freedom, the challenge of making a home.[32]

All of these are central components to people's lives in Hidalgo County, getting passed along by the people living in the region to those new to the area through social gatherings, work-sharing, or experiences with children, grandchildren, and neighbors. It is a function that Barre Toelken calls the ideational core of the community, interactions that:

> help to reinforce and maintain the central ideas of the group (their value centers), help to induct newcomers (children and greenhorns), into the group, and help to define outsiders and strangers.[33]

Work-sharing, what we know as "being neighborly", is another important way people's identities are not only strengthened within themselves but tied intimately and become interdependent with others in the community. As one resident explains:

> I help my neighbors and they help me ..... hell, we get along with everybody in the county...we work together all the time. He [neighbor] is gonna help me tomorrow and I'm gonna help him Saturday.

The difference between rural and urban values is a major concern as urban influx and encroachment into rural areas continues to increase in the Southwest. Much of the problem, as I've already said, is simply a matter of coping with differing values: values that are so deeply embedded, virtually inseparable from the person, that they demand the recognition of almost separate realities. The majority of urban people are likely to see a vastly different horizon when they look upon the spaces of the Southwest and Hidalgo County than the one seen by rural residents. A difference which prompts J. Kennedy to explain, rural people tend:

> to have different interactions with rangelands than urban societies, often resulting in different perceptions, values and uses. Many modern conflicts over rangeland or wildlife issues are conflicts of

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[32] William Cronon, Under an Open Sky, 24 (see note 2).

[33] Taken from Barre Toelken, The Dynamics of Folklore (Boston: Houghton Mifflin, 1979). 106

> agricultural (utilitarian) and urban (biocentric) values about human relationships with and the use of nature.[34]

The different views over rural landscapes results in a somewhat diabolical tendency in politics and academics to label rural people as "traditional" and urban people as "modern" -- giving rise to the misconception that rural people are less informed and less willing to change in the face of newly "emerging world" (read urban) views. It is a tendency that makes a lot of people in Hidalgo uneasy, even angry in some, like the resident who told me:

> I hate this traditional/modern dichotomy: these people are traditional and these people are modern. In order to understand intellectually the differences, they use this traditional/modern dichotomy: these people are traditional and these people are modern. What bothers me, is that they were talking about traditional people in the 20th century, assuming that these people stayed in the stone-age. They look at us as being clannish, and backward, which for them [urbanites] is being apolitical.

This dichotomy is a problem recognized well beyond the hills of Hidalgo as social scientists from a wide range of fields and interests begin to uncover some of what lies in the shadows of this division. Stuart Hall is among the foremost of these, and writes:

> the changing balance and relations of social forces throughout ... history reveal themselves, time and again, in struggles over the forms of the culture, traditions and ways of life of the popular classes... that is why popular culture is linked, for so long to questions of tradition, of traditional forms of life -- and why its 'traditionalism' has been so often misinterpreted as a product of a merely conservative impulse, backward looking and anachronistic. Struggle and resistance -- but also, of course, appropriation and ex-propriation. Time and again, what we are really looking at is the active destruction of particular ways of life, and their transportation into something new. "Cultural change" is a polite euphemisin for the process by which some cultural forms and practices are driven out of the centre of popular life, actively marginalised. Rather than simply "falling into disuse" through the Long March to modernization, things are actively pushed aside, so that something else can take their place.[35]

In other words, being traditional is not a way of hiding from change, but questioning the change that occurs and making the conscious choice whether to abandon the old to embrace the new. For the people of Hidalgo, their lifeways are centered around family and place, "traditional" things that mean more to them than entering the tourist consumptive market that much of the Southwest has declined toward.

People throughout Hidalgo County expressed a relationship of trust in their neighbors, a willingness to pass along the values of their community to others, and a general friendliness and satisfaction with the region they inhabit. Most of the people have a definite sense of who they are through their interactions with the communities and the majority of the people I spoke with, young and old, told me this was their home and where they wanted to stay.

Ranching:

Man is part of nature, and yet he is not: and in that tension he finds his existence.[36]

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[34] J.J. Kennedy, "Changing Social Values and Images of Public Rangeland Management" in Rangelands (17(4), August 1995.

[35] Stuart Hall. "Notes on Deconstructing The Popular" in People's History and Socialist Theory, Ed. By Raphael Samuel (London: Routledge & Kegan Paul, 1981). 227-8.

[36] Thomas Sieger Derr, Ecology and Human Need (Philadelphia: Westminster Press, 1975). 19.

Throughout my research in Hidalgo County I was struck by the commitment to place that I saw and heard in the residents of the small towns there. Yet this love of place is expressed nowhere as poignantly or powerfully as by those people whose love for land, home, and community is unparalleled and yet who face the highest risk of losing it all in the turmoil of the changing terrain of national values and political economics: the ranchers. Women and men who have lived their lives in the homes their forefathers built, who have crossed distance and duress that few would endure all for the sake of a lifeway that, for them, holds the essence of the values America was founded upon. For them, place runs deep -- it is attached to every moment of their lives and is as important to their identity as their own flesh and blood. For the rancher, place signifies the sacred, the resting ground of those who embodied the ideal of the American frontier: women and men who ventured into a "wilderness"[37] to secure a home, to create a lifeway around values they were willing to defend with their lives, and to build a place for those who came after they had gone. For these people, ranching becomes a religion and their birthright is to live and die in the same space as mother and father, or in the same place they will pass to their children and grandchildren. For these people the ranch is not only identity, it is destiny. For them, there is no other place, there is only where they are. It is best expressed by a woman who has spent her seventy years on the ranch her mother and father built and when I asked her why she stays, she told me in tears:

> This is my home. This is my life. My way of life. And my children ask me, "Well where do you want to live, mom, when you can't live there [the ranch]? And I tell them, "I don't want to be here, if I can't live here."

For many of the people who live in Hidalgo County, it isn't a question of choice, of picking the place they want to live. For them, there is no life outside of home. As it is so emotionally and eloquently stated above, there is no second option when it comes to place for these people. That is why the demand upon politicians and policy makers is so high here -- the stakes are high-peoples lives are in the balance. If decisions are made which force some of these people to move from their lands, then it will not only be, as many people in Hidalgo see it, as a violation of human rights, it will be, in many cases, a violation against life itself. Another resident strove to make her point as adamantly as she could when she told me:

> You can't take these people and move them. They think it is paradise here, and everyone here will tell you that. These people just cannot move. They cannot move. They're not mobile people. They're not city people, you can't just tell them, "I have a nice beautiful apartment for you." They don't care about a beautiful apartment. You should see some of my neighbors and the kinds of dwellings they live in. They don't care about these things. They don't live in fancy houses, but they think theirs is the prettiest place in the whole world.

The people who live in Hidalgo are not only engaged in a way of life they find attractive -- ranching and ruralness is their culture, it is every fiber of who they are, how they journey through their lives, and how they expect to die. And while voices will be raised for the economic "realities," there are other, far more humanistic realities as well. Even though it:

> is possible to buy the land from some of these people with money, because times are really tough right

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[37] The word ***wilderness*** is always at best a problematic one. As the descendants of European conquers swiftly became colonists they moved into a region already occupied by the first peoples to explore, conquer, and colonize the continent. William Cronon explains that "settlement" really meant "land taking, and land taking meant violence. Violence was central to the frontier experience ... Always it drew dark lines on a landscape whose newly created borders were defended with bullets, blades, and blood ... The more settlers invested their labor and their dreams in the land, the more they belonged to the land and the more the land belonged to them. Indeed, the longer they (and their children and their grandchildren) perceived themselves in such terms, the less one could call them invaders. Before very many years had passed, they too were defending the homes of their ancestors (Under and open sky), 15." I'm saying all this from the perspective of the people here in Hidalgo County, for them it is the home of their ancestors and no one else's.

> now, these people will break emotional if you do. Their ain't no willing sellers up here. But what is a willing seller? Nobody thought to ask where did it leave them and where did they go after that.

Indeed, ranchers in this part of the West who have, for years now, felt threatened by the implementation of "land reform" and otherwise feel the effects of a changing economy and, for them an often alien and uncertain set of values being brought from primarily urban areas, are moving ahead with very visible forms of resistance and change. It is in these forms of resistance and central to the impetus for the change that one recognizes "how important cleavages and opposition can be in sustaining a regional identity."[38] What ranchers are resisting and the sacrifices ranchers are willing to make to ensure the continuation of this resistance, underscores the deep fracture at a fundamental level ranchers now feel between themselves and organizations whose ideologies are being brought into this part of the Southwest. Ideologies which arise most often from urban mindsets and have been forced upon rural people, ranchers especially, by politicians anxious to garner the massive numbers of votes and dollars in those urban regions. Ranchers encounter threats to their culture and this, in turn, deepens the fractures within their way of identifying with themselves as Americans but also as keepers of something sacred; holders of the great American myth of the cowboy and what that myth represents to our nation. For ranchers in Hidalgo ideology is a lot less ideal than many of us recognize it to be. As a resident said, "I understand that:

> ideology motivates people. But in the rural area, when these people are talking about America, about their constitution and how much they love the United States, they're really talking about their ranch...it's physical for them, it's not completely ideology in the way I understand it to be. It's like, America is my ranch." And they'll say it's violating their American Dream, but I think it really ties so strongly with their connection to where they live.

In other words, the American Dream is not a dream at all among ranchers and residents of Hidalgo -- it is embodied in the place they have made for themselves, as much a part of the landscape as their own flesh and blood. This is why the land upon which the residents lives and lifeway depends is so utterly important to them, and why they care for it as deeply as anyone possibly can. Heather Thomas, in her research on range management, concludes that management of rangelands:

> has been a mix of science, tradition and politics, with the rancher caught in the middle trying to grow livestock and grass. The rancher is the only true range manager, for he is the only one actually on the land. The health and future of the land affect his own future. But the government agencies and pseudo-environmentalists haven't understood this very basic fact, and have often stood in the way of good management, rather than trying to work with the ranchers.[39]

Ranchers in Hidalgo are intimately and inextricably connected to their lands, where their work life, and living come together. For them, I was told:

> the land is important to us - the land is damn important, because we know we cannot make it without the land. If you want it put into Marxist terminology, that's my means of production. I cannot destroy it, I need it. But by the same token it is not a hammer, it's something you learn to love, too.

The feelings here run deep when it comes to the land, where the land is cared for by people who were not trained in management from books, but from sweat and blood and a love almost ineffable, more like what one resident called:

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[38] For more detailed thoughts see Clyde Milner II "The View from Wisdom" in William Cronon's Under an Open Sky: Rethinking America's Western Past (New York: W.W. Norton & Co. 1992), 220.

[39] Heather Smith Thomas, "History of Public Lands Grazing" in Rangelands (16(6), December 1994)

> an instinct; they grew up with it -- sometimes they cannot even explain why they do things, or why they do it this way. You cannot ask a straight question sometimes, and get a straight answer. Not because their stupid -- I came to find out that their smarter than me -- it's because they've never had to put it into words that will make sense to a person like me. They talk in very short sentences and the images are very, very visual. They don't know it, they just do it -- and they do a hell of a job.

A job that often times is unappreciated by others visiting Hidalgo -- pointing to the future dangers for the residents and ranchers or this county -- who enjoy seeing:

> the differences. And I can see it day in and day out. I have all intimate feeling with the land and I don't like somebody telling me that I don't have the right to be there because I'm destroying his wilderness. Now I'm getting real emotional, but, damn it, it hurts. You're here trying to do your best with the place you love, the place you've given your whole life to caring for and somebody else comes and tells you your just an intruder. On his place!

New Mexico is a land of space; of landscapes often appearing more art than the art representing them. And like the rest of New Mexico, Hidalgo County rolls out the distant mountains like a vision on canvas. It gives one the feeling that it is a place more land than people. It is a feeling that most people have when coming into the Southwest. But it is a perception possible only when you're passing through - for the people who live in Hidalgo County it is the presence of people and the communities they live in that defines their identities in the midst of the space. This is important and often overlooked because for most people, especially those who live in urban areas and yet make the decisions that affect the lives of rural people, space "does something to the vision. It makes the country itself... into something formidable, alluring, and threatening... "[40] and it has made Hidalgo County, and no where else in the world, home for the people living here.

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[40] Stegner, Wallace, Where the Bluebird Sings to the Lemonade Spring, (New York: Random House, 1992).

LEA COUNTY
CUSTOM AND CULTURE

STATEMENT OF CUSTOM AND CULTURE -- LEA COUNTY, NEW MEXICO

The lure of open land led to the settlement of Lea County early in the 20th century.

That same openness: unfettered rangeland under limitless sky, still defines Lea County and its people today.

The county's 2.8 million acres anchor the southeastern corner of New Mexico. They are largely flat, semi-arid, and without significant timber or above-ground flowing water. Their wealth lies in the grass and cultivated crops on their surface and the vast reservoirs of minerals beneath.

As a political entity, Lea County was established in 1917 from the eastern parts of Chaves and Eddy counties. But its principal communities were founded some ten years earlier by settlers who had ventured onto the dry Llano Estacado when arable land to the north and east was pretty well exhausted.

Lovington, the county seat, was incorporated in 1908. The other four incorporated municipalities -- Hobbs, Eunice, Jal and Tatum -- were formally established much later, although they had their beginnings as farming and ranching communities at about the same time as Lovington.

Dry land farming and ranching were the means of subsistence in the area until irrigated agriculture was introduced in the 1930s. The number of irrigated acres, however, was still just 3,200 in 1940. The impetus to real development came with World War II, when an influx of population to the Hobbs Army Air Corps base and its suppliers increased demand, and as war-time technology made it easier to pump and distribute water.

Raising and breeding livestock has been as much a part of the county's history and economy as farming. If dry-land farming was a challenge, so was dry-land ranching.

As in much of New Mexico, livestock grazing in early Lea days required more acreage than most settlers could acquire by homesteading. It takes a lot of the kind of surface growth indigenous to the Llano Estacado to raise livestock without supplemental feeding. So, the practice of grazing livestock on the unclaimed public domain became as commonplace in Lea County as it was throughout the former Spanish and Mexican land grant areas of the Southwest.

The petroleum industry changed the face of the county in the late 1920s, beginning with the first discovery of oil near Hobbs in 1928s.

For at least the last 70 years, then, land use in Lea County has centered around agriculture, the range livestock industry, and petroleum exploration and production. The lifestyle and value systems of Lea County communities reflect the importance of these industries.

The challenge of conducting agribusiness in a semi-arid environment, and of extracting oil and gas from isolated, deep fields has bred into Lea Countians for several generations a strong belief in the right of self- determination, the sanctity of private property rights, and the value of open market competition.

Those principles have guided not only business practices but also government operations and accountability in Lea County throughout its existence.

Demographic data supplied by the Economic Development Corporation of Lea County indicates that only about three percent of the county's workforce of 21,346 people is employed directly in agriculture. However, the influence of agricultural, ranching and open land traditions is much more pervasive.

In the mid-1990s, the county's human population has grown to about 57,000 individuals. Its livestock population, on the other hand, includes approximately 74,000 cattle, dairy cows, sheep and lambs. Some 39,350 acres of land are dedicated to crop production, with annual harvests of cotton, grain sorghum, grain wheat, alfalfa and other hay, peanuts and chili. Race horses are bred and raised in the county, as are ostriches and emus.

Virtually every community in Lea County -- incorporated or not -- has its own roping arena. The Lea County Fair and Rodeo is second only to the New Mexico State Fair in attendance and participation by exhibitors and contestants.

Bird, small game, antelope and deer hunting are extremely popular recreational pursuits. Sand dunes dotting the southern half of the county are frequented by dirt bikes and all-terrain vehicles, as well as by hikers and target shooters. And it's not unusual to see, from any road or by-way in the county, a lone horseman silhouetted against the sky.

In short, Lea Countians are closely tied to the land by their occupational and recreational pursuits, and by their staunch belief in free enterprise and the equitable use of federal lands for the good of the many. They are fiercely protective of their individual and their private property rights. They pride themselves in self-suffiency, dedication to family and hard work.

To erode these values and customary pursuits -- as well as the character-building influence they exert -- by further restricting or unnecessarily regulating the use of public and private land would cut way at the very fabric of the county.

LINCOLN COUNTY
CUSTOM AND CULTURE

LINCOLN COUNTY - CUSTOM AND CULTURE
as influenced by Livestock Grazing on Public Lands.

I. Past Use

La Placita (Lincoln) was first settled in 1849 along the Bonito River. Small farms were established and a trading center developed. The establishment of Fort Stanton in the 1850's provided protection from the Indians and a market for goods produced on the small farms. Other settlements and farms were established along the Rio Ruidoso, Rio Rondo, and smaller creeks. In the 1870's, gold discovery led to settlements such as white Oaks, Nogal, Bonito City, and Jicarilla being established.

The development of the farms and gold field required the use of water and the doctrine of "first in time; first in right" developed. Water rights were established and the right to use the land was tied to the use of water. These rights were bought and sold as chattel. "Squatters" and "jumpers" (those who used the land without having a secure water right) were common and often dealt with in a violent fashion.

In the late 1870's and 1880's, the large corporate cattle ranches along the Pecos River began looking for additional grass. They began securing water rights along the Rio Rondo and other creeks and allowing their cattle to graze the public domain for as far as they could graze away from water. Large ranches were also developed in other parts of the county by subsidiaries of English companies.

In the 1880's and 1890's, homesteaders began filing on 160 acre tracts of land. The first areas homesteaded generally had a natural source of water located on them. Other homesteads that did not have a natural spring or lakebed were somewhat arable, and summer runoff was diverted into dirt tanks and further ditched to the fields. These tracts of land went from public domain to private ownership and the use of the land was tied to a natural source of water on the land or dependent upon the rainfall. Crops such as corn, milo, and oats were grown for the settlers own use as well as sold or bartered to local merchants. They also raised livestock and these often grazed on public lands. Some of these early settlers brought in additional income by trapping and hunting as well as cutting firewood and posts on the public domain. Small communities were built and many one roomed schools established. In this time period, some of the large ranches would also have their cowboys file on a tract of land under the various Homestead Acts, then buy the land from the cowboy thereby transferring more land into private ownership.

With the development of water well drilling and windmill technology, smaller family-owned ranches were also established. They acquired land from homesteaders who either went broke or sold out to move to greener pastures. Livestock ranches were also formed when the large corporate ranches sold out to partners or drought and economic panic and depressions caused them to sell.

Livestock grazing on the public domain continued to occur by everyone, and there was no chance for any of the ranchers to conserve or manage the grass because "if you didn't use it, somebody else would". Some of the ranchers began fencing their deeded land and as much public domain as their cattle could graze from water.

When the Taylor Grazing Act was passed by Congress in 1934, the indiscriminate grazing use of the public land was halted. The public land with a three or four mile service area of "base water" was allotted to the ranchers and the land fenced accordingly into units. Some of these ranching units have remained in the same family ownership; some have been broken into smaller units through inheritance or an economic need to sell off a portion of the ranch; while other ranches have grown larger by acquisition of small ranches or homesteads.

II. Present Use

The use of Public land for grazing of livestock is very important to the welfare of the citizens of Lincoln County and also to the health of the range itself. Lincoln County has a total land surface of 3,109,760 acres of which 1,704,937 acres are deeded land, 301,481 are state trust lands, 524,717 acres are managed by the Bureau of Land Management and 398,743 acres are managed by the Forest Service. With 31% of the land in Lincoln County managed by the Federal government and 18% of that total managed by the BLM, one can see what a significant role these lands play in the make-up of Lincoln County. The BLM has 120,184 AUM's in Lincoln County or 21% of total grazing. This area supports $6.8 million in output, $1.7 million in income and 63 jobs annually. The State land and private land supports 24.3 million output, 6.2 million in income and 222 jobs per year. Since the public lands effects are assumed to be proportioned to the public forage, these effects are likely to be conservative estimates. There are approximately 124 commercial ranches in Lincoln County, of which approximately 69 (or 55 percent) depend on federal grazing leases (BLM and USFS) for at least one quarter of their vegetation requirements. Most of the other ranches have at least some small parcels of BLM land on their ranch. Many of these parcels of land are small or scattered throughout the main ranch.

With the elimination of livestock grazing on public lands, the operators would be forced to liquidate and disperse their livestock, or obtain other lands for grazing to remain in business.

Besides the obvious economic impacts, environmental considerations are worth mentioning. The technological advances and innovations available to modern ranchers and government agencies enables them to improve natural resources with proper management. Some of the effects of managed livestock grazing are loosening of the soil surface during dry periods; incorporation of mulch into the soil profile to speed humus development, nutrient recycling and increased availability in the ecosystem, tramping of seeds into the soil, reduction of excess accumulation of standing, dead vegetation material which chemically and physically inhibits new growth; and reduction of fire, insect, and rodent problems association with vegetation accumulation (Holochek, 1981). Proper grazing stimulates plant grown in many cases (Stoddart, et al.,1975).

Many of the rural communities in Lincoln County depend on agriculture as the primary source of income and jobs for their residents. The survival of most of our rural communities and the institutions which make up those communities, such as churches, schools, fire departments, community centers and business, would be seriously jeopardized by the reduction or elimination of grazing on BLM lands.

The use of the BLM lands to graze part of the 34,000 cattle and the 53,000 sheep is very important to both the rancher and the citizens of Lincoln County not only for the revenue brought in but also keeps the rural aesthetics of Lincoln County alive and well.

III. Future Use-BLM Standards & Guidelines EIS - Statement of Custom & Culture of Lincoln County.

Lincoln County's population growth and the world's population growth will put more demands upon the BLM administered lands within Lincoln County. These demands include increased recreation use, increase in oil and gas production, increased demand for agricultural products and an increase in demand for water. This population growth in Lincoln County will also place a larger burden upon the County's government for services.

The uses of the BLM administered lands must be maintained at or above the current levels to protect Lincoln County's economic base. Policies must be put in place to protect the local people's independence, political integrity, economic discretion and responsiveness to retain a way of life commensurate with local custom and culture. Increased restrictions and encumbrances upon current uses of the lands and property rights will hurt the economic base resulting in loss of community stability and slow or no economic growth.

Community stability and a growing economy will let the future generations of Lincoln County citizens inherit and continue the custom and culture that Lincoln County citizens currently enjoy. The custom and culture of ranching will pass along many of the beliefs and values that are cherished by our rural society including but not limited to: satisfaction of producing food and fiber to meet the world's needs - admiration, appreciation and respect for nature - good work ethics - leadership abilities - self-reliance and independence - appreciation, trust and fellowship between neighbors - conservation of natural resources - responsibility and reliability - patience and tolerance - respect, honor and duty - compassion toward all animals - accountability for one's own actions - the desire to learn - and the ability to practice successful resource stewardship. By protecting the custom and culture of ranching in Lincoln County, the small family owned ranches will be able to continue a way of life that is highly rewarding in the quality of life and the dignity that go along with a job well done.

IV. TRENDS

Since the 1970's a number of smaller ranches around Capitan, Carrizozo and Ruidoso have sold primarily for subdivision purposes. Some USFS allotments around Ruidoso are unalloted because the commensurate property was sold for development.

The trend in the county is for parcels of private land around the urban centers to be sold for housing purposes.

Some of the smaller ranches are being bought by more financially secure ranchers so as to maintain an economical unit.

Some of the larger ranches are being purchased by people from other states who have substantial outside income. Other ranches, particularly small units, are purchased by people who are retired or have off ranch income and can subsidize the ranch operation. In general, the trend is that livestock ranches are being bought by people with outside income, who are not relying on the ranch income to make a living for them, yet are attracted to ranching because of the myth and custom/culture attached to livestock ranching.

LUNA COUNTY
CUSTOM AND CULTURE

LUNA COUNTY

Luna County, with an area of 2,957 square miles, is located in the Southwest part of the State of New Mexico. With Mexico along its southern border, it is bounded by Dona Ana County on the east, Sierra and Grant Counties on the north and Grant and Hidalgo Counties on the west.

Deming, the County seat, is located approximately mid-way across the county east-west axis and alongside Interstate 10. Deming is approximately 100 miles north-west of El Paso, Texas and 80 miles east of the Arizona State Line.

Columbus, the only other incorporated municipality in the county, lies three miles north of Palomas, Mexico and about 30 miles south of Deming on State Highway 11.

Luna County was created in 1901, having been carved out of eastern Grant County and western Dona Ana; it was named for Solomon Luna, a prominent area sheep rancher and politician. The formation of the new county was the result of a long standing rivalry between Deming and Silver City; a situation that began in the 1880's with Deming residents demanding a county of their own. A series of bills were introduced in the state legislature between 1888 and 1901 requesting the establishment of a new county. The effort succeeded in 1901.

The earliest traceable inhabitants, the Mimbres Indians, established themselves in the area around 950-1000 A.D. Irrigation agriculture was probably employed. Their culture continued to develop until the drought period of the 1300s. Their settlements in the area were abandoned by the end of the extended drought. Today these early inhabitants are best known for their distinctive pottery with its characteristic designs of black and white.

Spanish exploration of the area probably started about 1780 when Governor de Anza led an expedition south from Santa Fe to explore for possible new trade routes to the settlements in Sonora. Two other groups left Mexico about the same time, hoping to meet de Anza's men in the Mimbres Mountain region, (about 40 miles north of Deming's present site). The three groups explored the area, including the Mimbres river and Cooke's Peak. The hope for meeting never occurred and a direct trade route remained undiscovered.

The second contact with the Spanish came in the year 1785 with another expedition into the area. The purpose of this expedition was not to explore, but to hunt Apaches who had become active in the region by that time. The venture was unsuccessful and the Apaches remained in the area, harassing the Spanish interlopers and their Anglo successors until the end of the nineteenth century.

The greatest hindrance to the early growth and development of the region, next to the Apaches, was the lack of water. Early water laws developed through custom into what became known as the Prior Appropriation Doctrine. This doctrine meant that the first person to use the water for beneficial use created a property right to the water. Mining and livestock grazing were the primary "beneficial use" applications within what was to become Luna County.

This doctrine existed in Mexico prior to U.S. acquisition of New Mexico; it was continued by New Mexico territorial and state governments and was culminated by Congressional passage of the Act of July 26, 1866, which stated in part: "That whenever, by priority of possession, rights to the use of water for mining, agricultural...purposes, have vested and accrued, and the same are recognized and acknowledged by the local customs, laws and the decisions of the courts, the possessors and owners of such vested rights shall be maintained and protected in the same". Water rights have long been a property right in Luna County.

Early settlers in the region quickly laid claim to the seeps, springs and wells under the prior appropriation doctrine. Those who owned the water sources often controlled large areas of grazing land. It was an accepted fact within the West, that "He who owned the water, owned the land."

Following the Mexican War, the boundary between the United States and Mexico was established thus leaving the area containing Luna County on the American side. Much of the land in the county was obtained through the Gadsen Purchase, with the U.S. seeking the land for a southern route for a transcontinental railroad.

A southern land route was in great demand following the gold rush boom in California and a new trail was developed by the Butterfield Overland Mail Company. The company was in operation until the new Southern Pacific Railroad lines forced it to close its doors.

Fort Cummings, in 1863, was established in the county to contain the Apaches - who posed an ever increasing threat to the settlers. The fort, manned by Black troops, was built with twelve foot thick walls which protected the garrison containing barracks, hospital, offices, commissary and quartermaster departments. The fort was of considerable importance as it guarded the southernmost portion of the Butterfield Trail, which was considered one of the most dangerous stretches of the southern route. The fort was abandoned in 1886, after years of unsuccessful attempts to contain the Apaches.

A number of small settlements were established, in site of the Apache threat to the settlers, after promising mining finds were made. These towns, Gage, Hermanas, Victorio and others, still persist on some maps today, but little sign of their existence remains. Other towns, Vencill, Wemple, Mongola, Marios, Luxor, and Ocho grew-up at road and rail interchanges but never seemed to develop.

Only two of the settlements, Deming and Columbus, took hold and grew. Columbus, a small border town, was largely burned in 1916 by followers of Pancho Villa. The town declined in population following the raid as frightened villagers moved elsewhere.

Deming became the county's population center following its inception in 1881. The town was named for the wife of one of the owners of the two railroads which met at the Deming terminal. Known as the "City of the Windmills" because of the windmill beside every house, Deming grew in importance. It became a central shipping point for minerals and livestock and a stopping point for travelers on the railroad.

Deming attracted many rough men of the West because of its importance. It is said that General Crook rounded up outlaws in Arizona and gave them one-way tickets to Deming. Social life in Deming was giddy, with numerous bars and saloons, and the Harvey House as its center. "The Bucket of Blood", "The Aquarium", and "Climax" saloons were as colorful and exciting as their names. Finally, the citizens of the town formed their own Militia and held drills in the streets. This, combined with the final capture of the Apaches, made life in Deming more secure and orderly for its inhabitants. Social graces flourished with the Deming Opera House reputed to be the finest between Kansas City and Los Angeles. Luna County and its inhabitants, in 1901, had finally arrived.

Mining has played an important role in the culture and custom of the county. There has been rather extensive mining activity in the Florida Mountains and Cooke's Peak, with the most active period from 1880 to 1920. Metals mined in the area include lead, zinc, copper, silver, gold and manganese. A mill for processing ore was built in 1921, but did not prove profitable and was discontinued in 1931. Manganese deposits were worked during World War II and in the 1950's but these too played-out and have been discontinued.

The area of present Luna County has been principally cattle country since the early 1860's. Mining; the Butterfield stage route; the soldiers stationed at Fort Cummings; the approaching railroads, with their trackside towns, caused the early settlers to realize the profit of the surrounding land lay in the grazing of livestock. Even before the county was formed in 1901, Deming and Columbus were the chief cattle shipping points in Southern

New Mexico. The rancher who owned the water controlled vast areas of the land in this arid region of unassigned lands on the public domain.

The Taylor Grazing Act was passed in 1934, recognizing and protecting the rights of the county's stockmen to continued use of federal lands. The law created grazing districts and recognized the grazing preference rights of ranchers whose livestock were grazing the public domain, and who possessed water rights and deeded property contiguous to the public land they were using. The rights were acknowledged, on allotments of public land, by permits designating the number of animal units allowed (or permitted) by the Bureau of Land Management (BLM). Preference rights could be bought, sold or transferred by the ranch owner alone. The law provided that preference rights could only be obtained from a willing seller. Once the transaction was completed the new owner could apply for and obtain a permit from the (BLM). Thus today, federal lands in Luna County contain property rights which are owned by ranchers and other property rights owned by the public. This situation has been and continues to be a source of confusion and animosity.

Despite the confusion over property rights on the federal land, cattle have played a major economic role in the county over the years. The total number of cattle in the area in 1910 was about 31,000 and today the county boasts more than 40,000 notwithstanding recent droughts and poor market conditions. The cattle industry, along with other sectors of agriculture, continues as the economic bedrock of the county.

In 1909, irrigated farming came to the county, and the agricultural economy was firmly established. The soil and water combined to provide an excellent variety of crops; chief of which today are chile, cotton, hay, wheat and onions.

Today Luna County is in the midst of a period of transition; holding to the traditions and customs of the past, while positioning for the future. Agribusiness, tourism, and trade with Mexico are vital to our future growth, but our strength remains in crop production and the livestock industry. The citizens of the county realize the hard lessons learned from the past; the future of the county remains with the two elements that have brought us to this point -- our land and our water. We must protect these resources above all others.

CUSTOM AND CULTURE

Luna County inhabitants, through a long history of Indian, Spanish, Mexican and American settlers, have bonded in an appreciation and love of the two elements which have provided for their livelihood over the years. Those two elements are land and water. Those two have become, not just soil and moisture in the traditional sense but, "our" land and water. The area encompassing the land and water is home and in many cases the home of our ancestors. There is a deep sense of belonging associated with that area. Here in this place of earth and rain their "roots" were nurtured and watered. It has not always been that way.

The early Mimbres Indians, who were the first known to irrigate their crops in this region, lost the area as their homeland. The drought came and stayed too long. The people disappeared and with them their custom and culture was lost. Other people soon followed with similar results.

The Spanish explorers rode in to find fortune, established towns and soon left as they came. Mexico replaced Spain in North America, as two cultures blended together and Mexican people moved in and replaced the Spanish. The Mexican settlers further developed existing trade routes, expanded their frontier and pushed north. Like those who preceded them they could not hold these lands either.

Americans, believing their destiny to be manifest, overwhelmed the government of Mexico and through treaty and purchase this area became a part of the territory of New Mexico. The new settlers fought the Apaches to hold this land - their new home. They were a tough and resilient people who came to stay. They conquered the adversity which had made the place so hard to tame. Those early pioneers used the land and the water and they made this place their home.

Those pioneers, before irrigation techniques became sufficiently advanced, capitalized on the natural resource produced by the soil and rain -- the grass; the forage. They became livestock producers. Their beef fed the soldiers who fought the Apache; the men who built the railroads; the miners who extracted the ore; and they shipped their cattle east to feed an ever increasing market. The soldiers left as the Apache were quieted; the builders moved on as the railroads were finished; miners searched elsewhere as the mineral sources ran out; but the cattlemen stayed and continued to feed the people back east. Ranchers, like the farmers who followed, owed their very existence to the land and water. They remained while the others moved on, and they provided the stability required for a culture to grow and flourish.

Those early settlers' firm tenacity played a major role in the manner in which many of Luna County's present residents react or respond in their behavior patterns. The ranchers whose families came and stayed, now boast of being third and fourth generation stockmen. They have shared In the passing along of values and beliefs which have created a way of life which is unique to this community. The families who passed the same ranch to their sons that grandpa carved out of this arid wilderness, likewise passed along a knowledge and love for the land that can only be obtained from working and living on that land. Not just that land, but their land.

It was their land in the classic John Locke theory which consisted of the idea that property was created by mixing an individual's labor with the state of nature (the unassigned lands of the territory). The water was their's by virtue of the doctrine of prior appropriation, which stated that the first person to use the water and put it to beneficial use, created a property right. The early settlers passed these concepts on to their heirs and the local community. Thus there was a powerful motivation to care for the land and water.

Early pioneers found that grasses must be preserved and conservation was vital if their business was to withstand drought and low market prices. They came to understand they could not abuse land and water resources and continue to have a viable ranch which could be passed to their heirs. This concept became a way of life; a part of the rural culture of Luna County.

This way of life, has spawned a powerful emotion that runs deep in the people who live on the land. They believe that they understand how to care for it better than anyone else. A concept similar to that has captured the urban members of the county as well.

The idea, that local people know what is best for their county, is comparable to the assertions that ranchers know what is best for their land. People in the towns of Deming and Columbus have long concluded that they know how to solve their local problems better than anyone in the governing bodies of Santa Fe or Washington, D.C. They do realize however, there are times when we all need help.

Today, as in times past, when hard times fall on a family it is customary to help them through those times of need. This is what Luna County is all about and the type of thing we desire to protect and continue as our tradition. We believe in helping one another.

Help is necessary when it comes time to work cattle. Moving cattle from pasture to pasture in order to steward the range; branding; yeaning; shipping; and a multitude of other chores is too much for one family to handle at times. That's when neighbors share the job and help each other. Helping one another is a habit we want to preserve.

Even with help from friends, farming and ranching is a difficult way to raise a family. Today's ranch and farm will usually only support one family. Often the principal providers must work a second job as well. Never before has that old saying been more true, that says, "Behind every successful rancher is a wife -- who works in town." Because of the economic difficulty of family agri-businesses, children learn at an early age the meaning of responsibility; the importance of hard work. The result is the development of young people with a sense of self worth that serves them throughout a lifetime. Rural kids grasp the meaning of "family." They always remember it was at home that they learned these important lessons.

Home is the farm or ranch they grew up on. This is the stability in there lives that they can always count on -it's their special place. A place they can return to and find the recuperative power to revitalize that inner being. That is what it means to grow up on a ranch in Luna County. That is what generations of living off the land give to people.

The people who lived on these lands and drank from these waters before more recent times left a wonderful heritage also. Their contributions have left powerful influences on the people of Luna County. The Mimbres Indians handed down an almost reverent respect for beauty. Today we admire the exquisite art work of their pottery and we study their culture. We recognize a spirit of adventure which has been passed down from the early conquistadors who searched for their fortune in gold in this land. We greatly admire the humble religious faith and powerful family ties inherited from Mexico. We honor the proud Apache people, with their fierce desire for freedom; their invincible ability to withstand the cruel elements of the environment in which they lived. These are all a part of the mosaic that has been woven together to form the structure that supports the way of life residents of Luna County wish to maintain and strengthen. The past has forged us and made us the people we are today. We have been blessed by the blending of many peoples, mores and traditions, but beneath it all is the land and the water. The love for this land defines us best as who we are.

OTERO COUNTY
CUSTOM AND CULTURE

THE CUSTOM AND CULTURES OF THE PEOPLE OF OTERO COUNTY

The very first people to inhabit our county were transient. They came down from the north, in the winter they hunted game in the desert and migrated to the cool Sacramento Mountains in the summer. We find artifacts they left behind in the Fresnal Shelter, under the Otero Mesa Rim and their petroglyphs at Three Rivers and on the Cornudas Mountains in Souther Otero County.

Probably the proudest people ever to rule this part of the world were the Apaches. Their territory included west Texas, New Mexico, Southern Colorado, Arizona, Sonora and Chihuahua.

Our local tribe was the Mescalero Apaches. One of their staple foods was the mescal cactus, so they were called "mescal eaters" or Mescaleros. The mescal plant grows in the desert mountains of southern New Mexico. It is about two feet tall. The Mescaleros would cut off the spiny leaves to reveal the heart of the plant which is about half the size and shape of a basketball. They were baked with wood fires and stones for several days before eating and the leaves were used for fiber.

The early day Mescaleros never practiced agriculture but were very nomadic. The traveled down to the Texas plains, through western New Mexico and Arizona, down south into the Sierra Madre, and continued south and west into the tropics--hunting and gathering as they went. Then they would return to their homeland up through Chihuahua and cross the Rio Grande coming back north to the Tularosa Basin and Sacramento Mountains. Resisting first the Spanish and later the Anglos, they put up a gallant fight to save their land, but the end came when Geronimo surrendered in Skeleton Canyon. They were made prisoners of war and incarcerated in Florida. They were later sent to Fort Sill, Oklahoma. After Geronimo died in 1909, the Apaches were released and many of them came back to Mescalero. Today, we have a mixture of many Apache Tribes living here. We still hear many of the royalty ancestral names, such as Cochise, Shanta Daklugie, Geronimo and Chino. Today many of the Apaches are farmers, ranchers and foresters. They also manage a thriving timber and tourist industry.

1800's

The next people to come to our area were the farmers, ranchers and miners. Most of these people came from Texas soon after the military came to protect the settlers. Forts were built all over the west, and our closest military protection came from Fort Bliss, a small fort north of Tularosa, Fort Stanton and the Buffalo Soldier camp near Wind Mountain in the southern part of Otero County. Farming soon failed except where it could be irrigated. In the mid 1930's the last of the dry land farmers gave up. The miners had their hey day in the Jarilla Mountains near Oro Grande and on the west side of the Sacramentos. The Oro Grande area dominated the local mining industry, and the real rush came when 61/2 ounce gold nugget was found in the Little Joe Mine. Three mining camps were built up in the mountains northwest of Oro Grande, -- Brice, Lucky Flat and Ohacey (the only one with a post office). 7 miles of railroad were built up through the mountains and a smelter was built at Oro Grande, which at the time had 3,000 residents. A 53-mile pipeline to bring water from Sacramento River was constructed. This pipeline still furnishes Oro Grande with water. Oro Grande had a newspaper, 9 saloons with brothels and all the gaiety of any other mining boom town and gambling center. Three train loads of Ore came out of the mountains each day for many years. The miners were on the top rung of the social and economic ladder for many years, but as the ore played out the rancher became the dominant leaders. After the Civil War many ranchers moved to our area. They could get free land, free grass and water. Ranching was our number one industry for many years, and is still an important part of our economy. Many small ranchers moved their herds from Texas, early day ranching included cattle, sheep, goats and horses to be sold to the calvary. Several cattlemen built vast empires such as Oliver Lee and Albert Fall each controlling in excess of a million acres. There were also John Good of La Luz and Pat Goglan who was called the King of Tularosa and was a partner of Billy the Kid in a beef contract for Fort Stanton.

The U.S. Forest Service and the Bureau of land Management were given management authority over all federal land and the herds were cut drastically.

1900's

In June 1898 the railroad reached Alamogordo, then on to Cloudcroft, opening up the new industry of lumbering. The stagecoach took passengers from the Cloudcroft depot to Stegman which is now Artesia. The railroad also opened up our county to tourism. Cloudcroft and Alamogordo built some fine hotels and Cloudcroft had Casino-type gambling for many years. Every few miles along the railroad, small towns and villages were present some of them being Valmont, Escondida, Turquoise, Hueco, Newman, Kearney siding and Three Rivers.

In the mid 1940's a paved road was built to Cloudcroft and the railroad was taken out. Lumbering is still an important industry for our county, even though it has slowed down the past few years because of environmental concerns. The community of Mayhill, on the Penasco River, is an irrigated farming and ranching community. Weed is on Agua Chiquita Canyon and is mostly ranching and lumbering. It is a very old settlement. Pinon is a ranch community of sheep, goats, and cattle. The communities of High Rolls and Mountain Part are fruit growers and are becoming a bedroom community for Alamogordo. La Luz is a very old community and has some irrigation. Tularosa was started by families from the Rio Grande in 1865 and is our oldest town. It has irrigation and most of its labor force works for military related industry. They have a rich culture and history. Boles Acres, the Oro Vistas and Dog Canyon settlements all south of Alamogordo, are people who enjoy rural living. They are mostly employed at Holloman.

In 1942 the Alamogordo Army Corps training base was built near Alamogordo. Little did we know how it would change our lives forever. Much of our ranch land was permanently withdrawn for bombing range. At the present time White Sands Range covers 2 million acres and employs 8,160 people. It is the largest overland missile range in the country.

In the mid 50's the ranching industry again was affected when the military purchased several ranches in southern Otero County to create McGregor Range. The purchase included the price for the private land, improvements and the lease hold interest for the grazing lease. Some of the leases were under the jurisdiction of the BLM and some were controlled by the National Forest Service. After the purchases were completed, the ranch houses and outbuildings were taken down. Since that time this area has been used for military target practice, Roving Sands aneuvers and speculative cattle grazing to the highest bidder. Our ranching industry is a small part of our economy at the present time. However, they are a very important part and are a very proud and colorful people.

The county tax records show that we have 19,562 cattle, 964 horses and mules, 9,892 sheep and 837 goats. This is a value of approximately 12 million dollars of earning assets for our county. The latest income figures available for agriculture are from 1994. Fourteen million, nine hundred forty one thousand, 14,941,000, was the figure for all agricultural income for Otero County for that year. We assume the largest portion was ranching, then fruit, nuts and hay, etc.

The National Defense now dominates our county. In 1990 Holloman became the world's only F-117A Stealth Base, the plane that played such a major role in the Persian Gulf War. The F-4E Phantom II, the T38A Talon, the HH-60 Pave Hawk helicopter and the 10 mile long high speed test track are also managed by Holloman. The German Air Force contingent at Holloman consists of 350 military plus their families. By 1999 the Germans hope to have 2,100 people here, with a $21 million payroll and a $100 million military infrastructure budget. Holloman and White Sands have an annual budget of $479 million. Holloman is now in the process of trying to acquire their own bombing range on the north edge of McGregor because White Sands has gotten so busy. This is land already being used by the military. If this happens it will cause more growth for the base and

Otero County.

To sum up the customs and cultures report, I would report that probably the only cultures we have lost are dry land farming, mining and the nomadic hunting and gathering. The county culture presently practiced by most people, involves or is directly related to the defense industry. Next in order would probably be entrepreneurial including tourism, education, ranching, the timber industry, farming and others too numerous to mention. Time constraints prevented us from acquiring dollar amounts for our other cultures.

Clif McDonald
Chairman Customs and Culture Committee
Public Land Use Advisory Council of Otero County

RIO ARRÍBA COUNTY
CUSTOM AND CULTURE

Customs and Traditions of the People of Río Arriba County

Prepared by Estevan Arellano of Oñate Cultural Center Alcalde, New Mexico on February 8, 1997.

INTRODUCTION:

When talking about the American West, all the major institutions that have made the West what it is today were introduced by Spain. Whether it is the large water projects which have brought irrigation to the West, or the livestock industry, Spain's influence is everywhere. And probably there is no better place to see this influence than in Río Arriba County where the first European settlement was established on July 11, 1598. From here the diversity of crops, *acequias*, cattle, sheep, goats, pigs, and the famous Spanish horse, they all spread to the far reaches of the West where they are now perceived to be American institutions, yet their roots are in Río Arriba County and the first Spanish *pobladores*. Based on the research we have done concerning agriculture in the Río Arriba, this area used to produce all types of fruits and vegetables. As early as 1630, Fray Alonso de Benavidez wrote, *"All this land is very fertile, it gives forth with great abundance everything which is sown in it: corn, wheat, beans, lentils, garbanzos, fabas, peas, pumpkins, watermelons, cantaloupes, cucumbers; every kind of vegetable: cabbage, lettuce, carrots, thistles, garlic, onions, cactus fruit, pitahayas, apricots, peaches, nuts, acorns, blackberries and many others..."* What we see today is that the diversity New Mexico used to enjoy is rapidly disappearing, including the grazing of cattle and the famous churro sheep.

Don Pedro Baptista Pino, in his 1810 presentation to the Cortes in Spain, had this to say about diversity, *"In New Mexico all the same crops are harvested that one finds in Spain, and are of much better quality than those grown in the rest of New Spain."* At that time all the lands today held by the Bureau of Land Management and the U.S. Forest service were part of the *dehesas*, or common lands, of the land grants which were used for grazing and for people to exploit the natural resources for materials to build their homes. Today that is no longer true, as more and more restrictions are imposed on a daily basis and locals feel more alienated from their "traditional ancestoral lands," while at the same time outsiders seem to be the only ones privileged to use the commons.

Cultures cannot survive for long without a sustainable agricultural base and sustainable land and water use ethic: care of the earth, care of people, contribution of surplus time, money and energy communally. Old timers call this philosophy.- *"el juicio de la tierra,"* the wisdom of the land. In his book, *Plants, Man and Life*, Edgar Anderson describes the garden/orchard plantings grouped around the houses in Central America, much like it used to be in the Río Arriba bioregion of New Mexico.

HISTORICAL PERSPECTIVE:

When we start laying out the ground work for developing an "Environmental History of La Raza," from our perspective, especially as it relates to land and water use in New Mexico, specifically the Río Arriba Bioregion, we have to go back to the writings of the ancient Greeks (*los griegos*), on one hand, the Moors in Al-Andalu and also at what was going on here in 1598.

As *raza* - whether we call ourselves *hispanos, Chicanos. nuevomexicanos, manitos, paisanos*, etc. - there are two very important documents that we have to familiarize ourselves with, one lays the foundation (*Recopilacion de leyes de los reynos de las indias*, published in 1681 in four volumes, divided into nine books, 218 titles and 6,447 laws) and the other (***El tratado de Guadalupe-Hidalgo*** and the subsequent ***Protocol de Queretero***) which guarantees our right to exist as defined by the "Laws of the Indies."

Though the term bioregionalism is a recent term coined by geographers when the *Leyes de las indias* (which have their antecedents in the *Ordenanzas* of King Phillip II of 1573 and the *Siete Partidas* of 1257) were being complied, *nuestros antepasados* in a way were laying the foundation for what today Kirkpatrick Sale, defines as bioregionalism:

"...the crucial and perhaps only all-encompassing task is to understand place the immediate specific place where we live. The kinds of soils and rocks under our feet: the source of the waters we drink: the meaning of the different kinds of winds; the common insects, birds, mammals, plants and trees: the particular cycles of the seasons: the times to plant and harvest and forage - these are the things that are necessary to know..."

Though once we - *la raza cóosmica* - might have been an alien presence in this land, because of our Spanish fathers, we have now become as natural a figure in this landscape as the pinon tree because whether we (or the Native Americans) acknowledge it or not, most of us have Native American blood running through our veins. It is that communion with the landscape which ties us to that enduring code of brotherhood, of being *carnales*, just as the poet makes the landscape itself the carrier of memory.

As with so many revolutions, that of Chimayó of 1837 and later the Taos Rebellion of 1847 - with battles in *La Cañada de Santa Cruz, Embudo, Mora and Taos Pueblo* - and today what is happening, it began with memory; today we are on the verge of losing our memory. And if we lose our language, we will lose most of our environmental history and that we cannot afford to lose. Never! For our memory has now assumed the form of the landscape itself. That is the essence of *Querencia*. If we lose one we lose both memory and landscape. *"El que pierde su tierra pierde su memoria."*

Now let's take a look at what I consider three of the most important "laws" in terms of defining bioregionalism, or *Querencia*. Sale reminds us that, "*bioregionalism calls for human society to be more closely related to nature, and to be more conscious of its locale, or region or life-place... It is a proposal to ground human cultures within natural systems, to get to know ones' place intimately in order to fit human communities to the Earth, not distort the Earth to our demands*," which has been the mission of Los Alamos.

Now, let's examine the following in terms of what constitutes our *Querencia* - Río Arriba:

(Book Four, Title Five, First Law: ***That the lands and provinces, that have been selected for settlement, have the following wing qualities, it is declared.***

"It is ordered, that having resolved to settle a province, or region which is under our jurisdiction, or later discovered, the settlers be considerate and be advised that the lend be healthy, recognizing if men live to an old age, and are of good complexion, disposition and color: if the animals and livestock are healthy, of good size and the fruits and sustenance good and abundant, and the lands good for planting and foraging: if poisonous, and noxious things grew: the sky of good and joyful constellation, clear and benign, the air pure and sweet, without impediments or alterations: the climate without excess heat or cold: (and having to choose between one or another quality, choose the cold) if there is good grazing for livestock: forests and trees for firewood materials for houses and other buildings: a plentiful supply of good waters for drinking and irrigation...")

It appears that Sale was following "las leyes" to arrive at his definition of what is bioregionalism, that for us is *Querencia*.

The same philosophy was expressed by **Marcas Cato** (234 - 149 B.C.), when he advised people in search of a good piece of land, saying that "*It should have a good climate, not subject to storms; the soil should be good, and naturally strong. If possible, it should lie at the foot of the mountain and face south; the situation should be healthful...it should be well watered...*"

Now, let's look further as to how our memory, nuestra querencia, had its foundation layed out.

(Book Four, Title Seven, First Law: ***That the new settlements be established with the qualities of this law.***

"...Try to have water close by, and that it can be conducted to the town and other property, diverting it, if possible, to better utilize it, and the materials necessary for buildings, lands for agriculture and pasture saving on labor and costs that come with long distance. Don't select sites to settle which are very high, due to the winds, and the difficulty of servicing and transportation, or in very low places, since they are prone to illness; settle in mid-elevations, where the north and south winds prevail. And if there are mountains or slopes, that they be facing east or west: and if not possible to avoid high places, settle in areas where there isn't any fog, observing what is best for health and accidents: and if building in the shore of a certain river; and if such is the case, when the sun comes out, it first hits the town, then in the water:"

Here is where our "*Memory of Landscape*," our *Querencia* - this sense of *place*, this land we call Nuevoméxico begins. Fray Angelico Chávez in his classic book, "*My Penitente Land*," attempts to define this *Querencia* and tie it to the biblical lands of north Africa, where our ancestors, the Moors, came from.

(Book Four, Title Seven, Law Seven: ***That the land and surroundings be abundant and healthy.***
"It is ordered, that the land and surroundings, which are to be settled, be the most fertile, with abundant, pasture, firewood, lumber; materials, sweet waters, natural people, transportation, ingress and egress, and there be no lake close by, nor marsh lands where venemous animals live, nor there be any corruption of winds, or waters.")

The three above laws lay the cornerstones, the foundation of what has become our *Querencia*, that which gives us a sense of place, that which anchors us to the land, that which makes us a unique people. "*Before it can ever be a repose for the senses, landscape itself is the work of the mind. It's scenery is built up as much from strata of memory as from layers of rock,*" writes historian David Schuma in ***Landscape and Memory.***

Our environmental history is based on a solid foundation, our ancestors were environmentalists - not extremists who understood what was meant both by private property and common lands. Wendell Berry reminds us that, "Historically, the commons belonged to the local community, not to the public." But before we can use the land in common, we need to go back to the past, and mine that "*oro del barrio,*" that knowledge which is rapidly disappearing and understand what are our privileges and responsibilities. As nuevomexicanos, today we have had almost nothing to say about our region's character and identity, yet we are the ones who have defined that character and identity.

As Sale writes, in terms of this *Querencia*, or bioregion, we have to know, "*The limits of its resources; the carrying capacity of its lands and waters; the places where it must not be stressed; the places where its bounties can best be developed; the treasures it holds and the treasures it withholds - these are the things that must be understood.*" He goes on to say, a bioregion "*is governed by nature, not legislature,* " or by the DOE, or any other governmental entity.

When we talk about the commons, the *dehessas y montes*, we are concerned about lands where we all have a common interest, an interest that precedes our interest in private property or the *suertes*. For we not only share in the common wealth but we also share in the common health, the two, in fact, are inseparable. Berry writes, "*If we have the 'right to life, 'as we have always supposed, then that right must stand upon the further right to air; water, food, clothing, and shelter.*" Exactly what the *Laws of the Indies* defined as the perfect places for the new settlements.

If we want the land to be taken care of properly, duty and sentiment are not enough, we must have people living on and from the land who are able and willing to care for it. We need to implement a different kind of education, a different philosophy and a different economy. Again I must reiterate, we cannot get good care of the land by demanding it from public officials. We have to understand that we cannot save the land and water apart from the people or the people apart from the land and water. To save either, we must save both; and for that we need a strong rural economy. In a way Los Alamos destroyed that rural economy, it destroyed the diversity that existed in northern New Mexico and in its place created an economy based on fantasy. Instead of preserving the possibility of intimacy in the use of the land, as dictated by the *Laws of the Indies,* Los Alamos created a consumptive society interested in sterile or inconsequential intimacy. The intimacy for the land became supplanted with an intimacy for money. Our economic system of *cambalache* was taken over by a money economy and greed.

Laura Jackson, in her paper, "***Agricultural Industrialization and the Loss of Biodiversity,*** " warns us that as farming families dwindle, we lose not only essential and perhaps irreplaceable knowledge, but "*When the minds responsible for these farms have left the countryside, replaced by minimum-wage labor in factory-style facilities, so will the potential to conserve and improve the agricultural landscape.*" Though Los Alamos pays good wages very few locals can get past a certain wage level. What we have in the Río Arriba Bioregion is a colonial economy and colonial economics place no value on caring for the lend, and do not teach, encourage, reward and much less protect it. So now we have environmentalists who have no concept of our history who want to come and teach how to care for the land.

Before when land was banded down from father to son, so was that knowledge of the land, of how to water from the *acequias*. That is not the case today; now the land passes so rapidly from one owner to the other that there is no time to learn how to use it. Everytime a piece of property is put on the market the prices go up and so do the taxes; then the local county commissioners get blamed when it is greed that drives the prices up. In Embudo from 1970 to now the price for land has gone up from $1,000 an acre to upwards of $40,000.

As a result it is predictably abused, old cars abandoned in the orchards, mobile homes in arroyos, luxury homes on mountain tops and *cienagas.*

CONCLUSION:

Berry reminds us, that *"if conservationists are serious about conservation, they will have to realize that the best conserver of the land in use will always be the small owner or operator...who knows how to use the land in the best way, and who can afford to do so."*

We have to prevent abuse of the land and water and the best blue-print is to follow the *"Laws of the Indies,"* as our forefathers did. We have to preserve what we have, but at the same time, realize an economic benefit that only comes from knowing the land, being intimate with the land. *"We have to move towards vigorous local economies capable of sustaining a stable and capable rural population rewarding them appropriately both for their products and their stewardship,"* Berry reminds us.

Sale tells us, *"...that bioregions are not only of different sizes but often can be seen to be like Chinese boxes, one within another, forming a complex arrangement from the largest to the smallest, depending upon which natural characteristics are dominant."*

It is this intimacy with the land that we must protect, this knowledge that has to be preserved. Some of us have been doing it for a lifetime. In closing I want to remind you:

"We do not inherit the land from our parents, we have it borrowed from our children," therefore we have a moral obligation to turn the land over to our children in a better condition than we got it, not worse. As I've pointed out, we have a solid environmental history to backup our philosophy of *Querencia*, or bioregionalism, as the best model for moving forward as we approach the 21st century it is a knowledge that draws a classic Greek agricultural practices, Roman law, Moorish customs, along with the knowledge inherited from the Mayas, Aztecas and Pueblos. Here the knowledge from Africa, Europe and the Americas converged in 1598. We are therefore, *la raza cósmica, la nueva raza*; we are a walking diversity of bloods, cultures and languages, anchored in *nuevomexico, nuestra Querencia.*

Santa Fe County

Custom and Culture

"By and large this is the New Mexico associated with the upper Rio Grande Valley and the mountains containing it. It was here that the first colonists settled in the late sixteenth century, and it was here that the province (state) acquired its identity. What attracted settlement was the mild climate, the apparent abundance of water, the fertile soil, and the forests covering the mountains. In many ways the landscape seemed to resemble that of Spain. Almost from the time of the first explorations New Mexico was seen as a kind of promised land: not a paradise of ease and abundance, to be sure, but a land of grass and forest and flowing water where the effort of working men and women would duly rewarded. For it so happens, even today, that no matter whether you come to New Mexico from the immediate east, the High Plains, the arid south, or the canyon landscape in the west, the region always seems, by comparison with the country you have been traveling through, a land flowing with milk and honey. What shatters the illusion is the long dry summer that afflicts the greater part of the state...

Spanish settlement was long confined to the Rio Grande region which to this day remains the heartland of Spanish-American culture. The small lateral valleys of the river, as well as the valley of the river itself provided colonist with an environment suited to their kind of agriculture and their kind of living-in small villages where old-established customs and relationships could be continued. Settlement in colonial New Mexico was in effect a transplantation, a new version of the order that had prevailed in colonial Mexico and Spain. It was not work of footloose individuals in search of adventures or wealth, but of small homogeneous groups of simple people who brought with them their religion, their family ties, their ways of building and working and farming.

Each village devised its own communal irrigation system; and each village created its own miniature landscape of gardens and orchards and fields and pastures, a landscape distinct from the surrounding wilderness.

The history of these villages is largely unrecorded; all we know about then is roughly the decade of their settlement, the date of the first church, and the place of origin of their settlers. One after the other, over the decades, the settlements died, but not without resistance. A flood buried gardens and fields under gravel or sand; a local resource- wood or game or a special crop-lost its market; a railroad ceased operation; the school was closed. Rather than abandon their home the villagers became ranchers and raised cattle or sheep. But in the end it died, and others died; first the remote villages on the margins of the plains, where there were no other jobs, and then the villages where the rangeland had deteriorated and the cedars and junipers were coming back into the abandoned fields. All that is now left of that traditional farming landscape are the villages in the mountain heartland and in the Rio Grande Valley."[41]

Agriculture has shaped both the community and culture of Santa Fe County. Due to its past role, agriculture remains an integral and complex part of Santa Fe County. It is simultaneously an economic development issue, an open space concern, an important water element, and a key ingredient in valuation of rural character and lifestyle consideration throughout the County. In all of these respects, the agrarian history of the County provides the foundation for considering how the important and positive aspects of this rural culture can be extended into the future.

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[41] Reprinted from: A book by John Brinckerhoff Jackson, A Sense of Place, a Sense of Time, published by the Yale University Press, Copyright 1964 by Yale University. A letter of permission, to reprint limited selected lines as requested, from the Yale University Press is on file at the New Mexico State Office of the Bureau of Land Management.

Today government and service sectors have replaced the agriculture sector. Santa Fe County's major employers include the state of New Mexico with approximately 9,000 employees in Santa Fe County: Santa Fe Public Schools, with 1,650 employees; St. Vincent's Hospital, with a staff of over 1,300; and the City of Santa Fe with 1,000 employees. Over the past 22 years the relative share of total employment for the various sectors has remained stable, except for government and services. The share of government sector jobs has declined from 39 percent of total employment to 22 percent. During the same time, employment in the services sector increased from 22 percent to 34 percent. On average service sector jobs pay below average wages. Santa Fe County has set a policy to diversify its economic base.

Santa Fe County government recognizes that the need of each of its communities may be different. It is important for us to seek economic development which is supportive of these needs, enriches our community life and promotes our values of self-reliance, individualism and entrepreneurship. Santa Fe County seeks economic activity which is environmentally and socially integrated with our way of life.

In December 1995, the University of New Mexico conducted a regional strategic planning process to focus on the ways to offset the impact of downsizing of the Los Alamos National Laboratory on the regional economy. Five industry clusters were identified to target:

Agriculture and the food industry
Furniture making and related home furnishings
Environmental technology
Biomedical industry including alternative healing traditions
Multimedia

All five targeted clusters have been adopted by Santa Fe County as important to diversify our economic base and to build upon our traditions.

The Custom of Livestock Grazing in Sierra County

The Development of Equitable Estates for Grazing on Federal Lands

(Adapted from the Draft Sierra County Comprehensive Land Use and Policy Plan, Part II, Chapter 2, pp. 2-5 to 2.14)

1.0 Scot-Irish, Mexican, & Spanish Influence on Sierra County's Land Use Practices

There is no question that the culture of the Scot-Irish, Mexican and Spanish people living in Sierra County have shaped the land use practices, customs and economy of the area. With regard to livestock grazing, these customs were also influenced by the local environment. As the local residents will attest, the environment in Sierra County for raising livestock is harsh. The weather is hot, the rainfall is sparse and it is difficult to work the soil to grow crops on anything but lands subject to irrigation. Because of these "abnormal conditions" when compared to lands east of the 30th meridian, it takes a great deal of land to sustain even a modest size herd of livestock. These environmental factors shaped the custom of livestock grazing in Sierra County.

As stated above, land acquisition under the governments of Mexico and Spain came from grants by the King of Spain or the Government of Mexico. However, because of environmental factors described above, that grant of land was normally not enough to sustain a herd of livestock. Therefore, in addition to the use of his property, the Spanish or Mexican citizen also used the other unclaimed lands belonging to the government, in connection with his private property, to sustain his herd, his way of life and to perpetuate community stability.

In New Mexico, the development of livestock grazing under the American system paralleled, intertwined and emulated the Spanish and Mexican custom of using the unclaimed public domain. Under the American system, although a settler could make a good living on 160 or 640 acres of homestead lands east of the 30th meridian, the same could not be said in Sierra County. As the Spanish and Mexican citizens had discovered, the environment in New Mexico required more land for grazing than could be granted to the settler. As such, a parallel custom, learned from the Spanish and Mexican settlers, became the American custom. Allowing livestock to graze on the unclaimed public domain became the norm.

2.0 Encouragement of Livestock Grazing to Assist in Populating the West

Not only was the grazing of livestock on the unclaimed federal lands the custom in Sierra County, the practice was encouraged by the United States Presidents and by the Army who wished to quickly settle and occupy these lands for the United States. There were three major reasons that American settlers and pioneers were desperately needed to quickly settle the New Mexico territories:

1. Concern that a foreign power would take control of these lands by occupancy.

2. The problem of securing the land from hostile Indian tribes.

3. The protection of the public traveling across the continent.

2.1 Concern That a Foreign Power Would Take Control of These Lands by Occupancy

Many American Presidents were afraid that, unless the New Mexico territories were populated and settled by citizens loyal to the United States, a foreign power would take control of these lands by occupancy.

Even though the Treaty of Guadalupe Hidalgo had ended the war with Mexico, the American Presidents wanted to be sure that these newly acquired lands would be populated with citizens loyal to the United States. As President Polk explained in 1847:

> Mexico is too feeble a power to govern these Provinces, lying as they do at a distance of more than 1000 miles from her capital, and if attempted to be retained by her they would constitute but for a short time even nominally a part of her dominions...
>
> The sagacity of powerful European nations has long since directed their attention to the commercial importance of that Province, and there can be little doubt that the moment the United States shall relinquish their present occupation of it and their claim to it as indemnity an effort would be made by some foreign power to possess it, either by conquest or purchase. If no foreign government should acquire it in either of these modes, an independent revolutionary government would probably be established by the inhabitants and such foreigners as may remain in or remove to the country as soon as it shall be known that the United States have abandoned it. Such a government would be too feeble long to maintain its separate existence, and would finally became annexed to or be a dependent colony of some more powerful state. No foreign power shall without our consent be permitted to plant or establish any new colony or dominion on any part of the North American continent...
>
> The Provenances of New Mexico and the Californias are contiguous to the territories of the United States, and if brought under the government of our laws their resources-mineral, agricultural, manufacturing, and commercial-would soon be developed.[42]

2.2 Securing the Land From Hostile Indian Tribes

In addition to the concern over the use of foreign powers on American soil, the Congress and the Presidents also faced the problem of securing the land from hostile Indian tribes. When President Zachary Taylor received the helm of the nation, he focused on occupying and controlling the southwest region because of her great agricultural and mineral wealth. However, as he soon discovered, the Southwest was not easily controlled because of its numerous Indian tribes.

President Millard Fillmore also faced problems with the warring Indian tribes in the Southwest. In his third address to the Nation, he stated:

> Every effort should be made to protect our frontier and that of the adjoining Mexican States from the incursions of the Indian tribes. Of about 11,000 men of which the Army is composed, nearly 8,000 are employed in the defense of the newly acquired territory (including Texas) and of the emigrants proceeding thereto. I am gratified to say that these efforts have been usually successful. With the exception of some partial outbreaks in California and Oregon and occasional depredation on a portion of the Rio Grande, owing, it is believed, to the disturbed state of that border region, the inroads of the Indians have been effectually restrained.[43]

Fillmore also continually reminded Congress that the Treaty of Guadalupe Hidalgo also required the United States to protect the Mexican frontier. Although Fillmore was able to convince Congress to appropriate larger regimes of the cavalry to the Southwest, he also recognized that the best protection against hostile Indians was to increase permanent settlements.[44]

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[42] Polk, James K., *IV Messages and Papers of the President*, 1847. New York, 1897, pp 539-540.

[43] Fillmore, Millard, *V Messages and Papers of the Presidents*, 1852. New York, 1879, p. 174.

[44] Fillmore, Millard, *V Messages and Papers of the Presidents*, 1850. New York, 1879, p. 87.

2.3 Protection of the Public Traveling Across the Continent

The government wanted to colonize the West as quickly as possible for the protection of the public traveling across the continent. As stated by President Polk:

> For the protection of emigrants whilst on their way to Oregon against the attacks of the Indian tribes occupying the country through which they pass, I recommend that suitable number of stockades and blockhouse forts be erected along the usual route between our frontier settlements on the Missouri and the Rocky Mountains, and that an adequate force of mounted riflemen be raised to guard and protect them on their journey...[45]

3.0 Protection of the Customs, Cultures & Property Rights of Those Already Living in the New Mexico Territories

After recognizing the difficulties of life in the southwest and the importance of keeping those lands for the United States, Congress and presidents would face the problem of determining (1) how the land would be secured for those already living in the Southwest and (2) how the land would be transferred to those moving to the Southwest. With regard to those already occupying the land, the answer to the question would be contained in "local law" and an international treaty.

As stated above, Kearny's Code and the Treaty of Guadalupe Hidalgo guaranteed the protection of the customs, cultures and property rights of those already living in the New Mexico territories. Because many of these settlers had already acquired property titles and additional property use rights from the Spanish or Mexican governments or by occupancy and the promotion of the public good and the public weal, those rights would be protected and honored by the United States government under the treaty and Kearny's Code. Such protection also extended to those land use rights which were not codified by legal title because of the promise to protect local custom. The Treaty of Guadalupe Hidalgo and Kearny's Code even extended the protection of property and land use rights as those uses passed from buyer to seller and from generation to generation.

With regard to the people who were induced by the American government to go to the Southwest to make their fortune, Congress and the Presidents promised "liberal grants" of the land. As promised by President Polk:

> I recommend that the surveyor-general's offices be authorized to be established in New Mexico and California, and provision made for surveying and bringing the public lands into market at the earliest practicable period. In disposing of these lands, I recommend that the right of preemption be secured and liberal grants be made to the early emigrants who have settled or may settle upon them. [Emphasis added].[46]
>
> In a separate address, President Polk Stated:
>
> That it will ultimately be wise and proper to protect and make liberal grants of land to the patriotic pioneers who amidst privations and dangers lead the way through savage tribes inhabiting the vast wilderness intervening between our frontier settlements and Oregon. and who cultivate and are ever ready to defend the soil, I and fully satisfied. To doubt whether they will obtain such grants as soon as the convention between the United States and Great Britain shall have ceased to exist would be to doubt

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[45] Polk, 1845, supra, pp. 396-397.

[46] Ibid.

the justice of Congress.[47]

Along that same line, President Zachary Taylor told Congress in 1849:

> [I recommend] [t]hat commissions be organized by Congress to examine and decide upon the validity of the present subsisting land titles in California and New Mexico, and that provision be made for the establishment of offices of surveyor-general in New Mexico, California, and Oregon and for the surveying and bringing into market public lands in those territories. Those lands, remote in position and difficult to access, ought to be disposed of on terms liberal to all but especially to the early immigrants.[48]

President Fillmore also urged that Congress move swiftly to establish a commission to examine the validity of all the lands claims in New Mexico and California, since he viewed the uncertainty of those claims as retarding the settlement of the country. In his annual address in 1851, he again stressed the need to encourage settlement of the Territories:

> The agricultural lands [of the newly acquired Territories] should, however, be surveyed and brought into the market with as little delay as possible, that the titles may become settled and the inhabitants stimulated to make permanent improvements and enter ordinary pursuits of life.[49]

Franklin Pierce followed President Fillmore to the White House. He also believed that agriculture development in the west and southwest was of the utmost importance. He urged that the lands be swiftly and inexpensively sold to those settlers who would develop the lands for agriculture purposes.[50]

President Ulysses Grant continued to encourage the movement west with promises of the acquisition of property:

> The opinion that the public lands should be regarded chiefly as a source of revenue is no longer maintained. The rapid settlement and successful cultivation of them are now justly considered of more importance to our well-being than is the fund which the sale of them would produce. The remarkable growth and prosperity of our new States and Territories attest to the wisdom of the legislation which invites the settler to secure a permanent home on terms within reach of all. The Pioneer who incurs the dangers and privations of a frontier life, and thus aids in laying the foundation of new commonwealths, renders a signal service to his country and is entitled to its special favor and protection. These laws secure that object and largely promote the general welfare. They should therefore be cherished as a permanent feature of our land system.[51]

While honest settlers and pioneers hastened west turning barren wasteland into productive farms and ranches, other not so honest and productive citizens also ventured west to attempt to make a fast fortune. Such stories of the graft and corruption of land speculators who would move into an area to deplete the timber and other resources then move on without purchasing or replenishing the land so that it would be suitable for use by permanent settlers caused Congress, in 1891, to alter it policies in an attempt to ensure that the honest settler would continue to build the American west. First, Congress permanently repealed the preemption acts and second, Congress added an amendment to the appropriations bill allowing the president to set aside "national forest lands" or forest reserves.

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[47] Ibid

[48] Taylor, Zachary, *V Messages and Papers of the Presidents*, 1849. New York, 1897, p. 20.

[49] Fillmore, Millard, *VI Messages and Papers of the Presidents*, 1851. New York, 1897, p. 127.

[50] Pierce, Franklin, *VI Messages and papers of the Presidents*, 1853. New York, 1897, p. 2749.

[51] Grant, Ulysses, *IX Messages and papers of the presidents*, 1853. New York, 1897, pp. 110-111.

4.0 Protection of the Rights of Livestock Operators Using the Forest Reserves

Even after the creation of the forest reserve system, the importance of the use of the unclaimed federal lands for livestock grazing was recognized and protected. As stated in the official annual report of the Secretary of the Interior in 1891, "One striking difficulty in establishing the reservations [forest reserves] themselves may be found in the fact that much of that land that should be reserved is as yet unsurveyed; other parts are subject to prior rights, or are expected to be included in railroad grants."[52]

Although the creation of the forest reserves or national forests had a very rocky start, livestock grazing was always part of the use of those lands. In fact, the Department of the Interior immediately began to adopt policies to protect the rights of livestock operators using the forest reserves. Those policies:

1. Encouraged the rancher to develop improvements to enhance the productivity of the forest reserves.

2. Allowed title to remain with the Forest Service so that those lands suitable for private settlement would only be taken if such settlement did not interfere with the livestock owners' grazing rights.

3. Allowed the states to collect taxes from the use of the federal lands to be used for the development of water resources.

4. Encouraged cooperative projects between the Department of the Interior and the individual livestock producer to better the land for livestock grazing.[53]

The Secretary of the Interior also established rules and regulations to implement the will of Congress in creating the forest reserves and to protect the prior rights of those within the borders of the reserves. *The first regulations allowing the continued use of the forest reserves acknowledged the Spanish custom of allowing local ranchers to have first priority for use of the public lands.* As described by the Secretary of the Interior in 1902.

> Applicants for the grazing privilege are given preference in the following order:
>
> (a) Persons residing within the reserve.
>
> (b) Persons owning ranches within the reserve, but not residing thereon.
>
> (c) Persons living in the vicinity of the reserve owning what may be called neighboring stock.
>
> (d) Persons living at a distance from the reserve who have some equitable claim to use the reserve.
>
> Class (b) under paragraph 16 should not be construed so as to allow large stock owners to obtain the preference therein given, by simply buying or obtaining small ranches inadequate for their business. This

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[52] *Department of Agriculture Annual Report to Congress 1891*, Washington: Government printing Office, p. 226.

[53] *Report of the Secretary of Agriculture, 1891*.Washington: Government printing Office, 1892..

> will not be tolerated.[54] [Emphasis Added].

Although these regulations initiated a good start in the recognition of the prior rights on the federal lands, further progress in the recognition of these rights was made during the 1905 Denver meeting between the Forest Service and stockmen. During this meeting, the following report was made:

> The main points of agreement, worked out by the department and stock organizations, emphasized that those already grazing in the forest ranges would be protected in their priority of use [Law of Occupancy and Prior Appropriations Doctrine]: that reductions in the number of grazed stock would be imposed only after fair notice; that small owners would have preference over large; that only in rare circumstances would the department seek total exclusion of stock from the forest; and that the policy of use would be maintained wherever it was consistent with intelligent forest management. Finally, some attempt would be made to give stockmen a voice in making the rules and regulations for the management of stock on local ranges through the establishment of forest advisory boards.[55]

In 1906, the above agreement was codified into regulation by the Forest Service "The Use Book." Those regulations permanently allocated grazing on the federal lands in the following manner:

> Applicants for grazing permits will be given preference in the following Order:
>
> (a) Small nearby owners.
> Persons living in or close to the reserve those stock have regularly grazed upon the reserve range and who are dependent upon its use.
>
> (b) All other regular occupants of the reserve range.
> After class (a) applicants have been provided for, the larger nearby owners will be considered, but limited to a number which will not exclude regular occupants whose stock belong or are wintered at a greater distance from the reserve.
>
> (c) Owners of transient stock.
> The owners of stock which belong at a considerable distance from the reserve and have not regularly occupied the reserve range.
>
> Priority in the occupancy and use of the range and the ownership of improved farming land in or near the reserves will be considered, and the preference will be given to those who have continuously used the range for the longest period.

It was by this system and the recognition of the long-standing use of the federal lands that created the permit and preference right system used by the Forest Service and Bureau of Land Management today.

5.0 Equitable Estates for Livestock Grazing on Federal Lands

After considering the Spanish and Mexican customs and culture as protected by Kearny's Law and the Treaty of Guadalupe Hidalgo, the promises made to the settlers and pioneers by the American presidents and Congress and the efforts made to protect and continue livestock grazing even after the creation of the forest

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[54] *Forest Reserve Manual.* Washington: Government Printing Office, 1902.

[55] Hage, Wayne, *Storm over Rangelands*, Bellevue: Free Interprise Press, 1989, p. 161; Albert F. Potter, "Cooperation in Range Management," *American National Cattlemen's Association Proceedings, 16 (1913):55.*

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reserves, the question to be answered by this comprehensive plan is whether those events have legal significance today. The answer to that question is YES.

It follows, if a person follows the law, he has the benefit of the law. The settlers in the New Mexico territories in obeying the local laws and customs, relying on the promises of the U.S. presidents and obeying the rules and regulations required after the creation of the forest reserves have earned an **equitable estate** for livestock grazing on public and federal lands.

An **equitable estate** is a "right or interest in land, which not having the properties of a legal estate, but merely being a right of which courts of equity will make notice, requires the aid of such court to make it available. These estates consist of uses, trusts and powers."[56] In cases of "conflict" between an equitable right and a legal title, the courts will either suspend the enforcement of the legal title, "or decree that it [the legal title] shall be considered as held in trust for the benefit of the one having the equitable title. If equities are made out, the court will always require them to be satisfied before the legal title will be enforced."[57] [Emphasis added]. Actions to protect incorporeal rights are also within the jurisdiction of the equity court.[58] Equitable estate, according to Noah Webster's 1828 *American Dictionary of the English Language*, is "...The estate or interest of one who has a beneficial right in property, the legal ownership of which is vested in another..."

There are numerous reasons that the equitable estate in the federal lands created by Sierra County's custom and culture, recognized by the presidents and Congress and originally protected and recognized by the U.S. Forest Service and Bureau of Land Management should remain in full force and effect today.

1. **Livestock grazing on the unclaimed or federal lands is protected under Kearny's Code and the Treaty of Guadalupe Hidalgo.** As described above, it was by Spanish and Mexican custom that a person grazing the unclaimed lands earned an equitable estate in that land. The extent or size of the equitable estate was determined by the amount of water owned by the settler. "A territorial Statute of 15 February 1887 limited the cattle on a given range to the number which could be watered."[59]

2. **The original Forest Service regulations sanctioning livestock grazing on the federal lands recognized and protected the grazer's right to use the federal lands.** As stated above, only those livestock operators who could prove a prior use of the unclaimed lands, who had adequate water rights or "commensurate property" and who lived in or near the federal lands could acquire a grazing permit. The fact that those grazing permits were originally taxed as private property further illustrates the Forest Service original intent of protecting livestock grazing on the forest reserves.

3. **Even today, the Forest Service and the U.S. Army recognize the monetary value of a grazing permit.** This is evidenced with the purchase of the Glenn Allotment by the New Mexico Department of Game & Fish and the condemnation proceedings by the U.S. Army when it acquired the grazing rights and the non-federal lands within the McGregor Range in southern New Mexico. The value placed on the Glenn Allotment was determined by the Forest Service. This documentation can be referenced in the Glenn Allotment file, Gila National Forest. The McGregor Range history is documented in a 1977 report from the Secretary of the Interior

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[56] *Bouvier's Law Dictionary*, p. .530, (1st. Ed. 1868).

[57] 27 *AM. Jur. Equity*, *§* 64 (1966).

[58] ibid

[59] Clark, Ira G., *Water in New Mexico*, Albuquerque: University of New Mexico Press, 1987, p. 147 (*New Mexico territorial laws of 1889*, Ch. 61, pp. 126-127).

and the Secretary of Agriculture.[60]

4. **The Internal Revenue Service (IRS) also recognizes a grazing permit on federal lands as a property right.** In Shufflebarger v. Internal Revenue Service, 24 T.C. 980 (1955), the Court held:

> That the grazing of livestock on national forests is to be regarded as a substantial, well-established, and indefinitely continuing part of the national forests program, is not, according to our reading of the grazing regulations and the Forest Service Manual, open to question... It seems to us abundantly clear that the statute and regulations contemplate that once the right to a fair and just allotment of grazing land has been acquired under the established procedures that right, subject to some adjustment if it should become necessary for the protection of the range or for a more equitable distribution among preference holders, is to be regarded as an indefinitely continuing right. [emphasis added]

As determined by the IRS, that "indefinitely continuing right" is taxed upon the death of the owner for the fair market value of the permit. That value is based on the "animal unit" numbers or carrying capacity of the permit which is usually one third (1/3) of the value of the deeded lands.[61]

5. **Equitable estates on federal lands are taxed by some of the western states.** In California, grazing permits were recognized as equitable property rights in 1850, and are now taxed accordingly.

6.0 Summary-Federal Land Grazing Permits are an Equitable Estate

Therefore, based on the customs and cultures of the people, the promises of the presidents, the historical agreements made with the United States Forest Service, and the value of grazing permits as recognized by the Forest Service itself, the Internal Revenue Service and by some states, **Sierra County hereby recognizes that those federal land grazing permits acquired under proper authority to be an "equitable estate."** As such, these property rights shall have the full protection of the Fifth and Fourteenth Amendments to the U.S. Constitution.

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[60] "McGregor Range History", *Study of Fees of Grazing Livestock on Federal Lands*, a Report from the Secretary of the Interior and the Secretary of Agriculture, Appendix C, Part 3(a), October 21, 1977.

[61] IRS letter of July 31, 1990 to Dick Manning, rancher; IRS letter of August 25, 1988 to R. B. Tippeconnic, U.S. Forest Service; IRS letter of September 30, 1983 to Robert Hadley.

NAVAJO NATION
CUSTOM AND CULTURE

Navajo Custom and Culture

It's hard to say for sure just when the Navajo first arrived in the Four-Corners area of New Mexico. There was nobody here to observe their arrival. However, it's easy to say that they became the preeminent denizens of the area. The invading Spanish or Anglo found them living in widely scattered family units, occupying loosely-defined territories. Without any distinct tribal leadership, individual bands were unaware of events affecting other tribal members. Their common bond, however, was their sacred beliefs and a love of the land.

The land provided the Navajo people with essentials that could be hunted, gathered and grown. Livestock were added to the resource pool in dramatic fashion. Around 1540, Coronado, in a search for gold, brought his conquistadors to Navajo land. He also brought horses, sheep and goats. Since the Spanish were uninvited and trespassing on Navajo land, the Navajo took horses and livestock as rightfully theirs. Horses, sheep and goats became as tightly woven into Navajo society as the splendid rugs that were to come.

For the next several centuries, an occasional raid or trade between the neighboring Apache, Ute, Pueblo or Spanish immigrant was the usual form of contact with the outside world. Although occurring earlier, serious Anglo exploration and settlement of Navajo land did not begin until the end of the Spanish American war in 1848. The Anglo invasion was accented and aggravated by the passage of the Homestead Act in 1862. The Navajo didn't always get along with the interlopers. The Navajo often found occasion to put down the herding staff and pick up the bow, arrow and rifle. Navajo history progressed with many a skirmish between the Navajo and their unwelcome company. The period 1846 to 1863 saw numerous attempts by the U.S. military to restrict Navajo activities. This segment of their history culminated, in 1863, with a final invasion by the U.S. Military led by Kit Carson, the vanquishing of the Navajo, in 1864, the Long Walk to Fort Sumner.

The Long Walk traversed three hundred rugged miles and took three wintry months for the survivors to accomplish. Nearly 9,000 Navajo were held captive in the barren Bosque Redondo Reservation. There was no food and only Pecos River water to drink. Wood for heat was as scarce as sickness and Starvation were abundant. 3000 died! Finally, in 1867, General Sherman was sent to Fort Sumner. He didn't fail to recognize the government's failure, and his solution, formalized in an 1868 Treaty, was to send the remaining Navajo back to where they came from. They could go home. And, in June, 1868, they did. Leaving Fort Sumner, they marched for two months before reaching Fort Wingate, where they were given food and livestock, allowed to mosey back to their ancestral homelands, and granted the right to resume their lives.

Of course, there were some conditions to this largesse. They would have to send their children to government schools and they could not resist the building of a transcontinental railroad through their land. This later event was to have unimagined, but spectacular, consequences.

The construction of the Santa Fe Railroad through New Mexico and Arizona was completed in 1883. The completion of the railway was also the inauguration of what is today a major Navajo industry... tourism. The pastoral Navajo people, who, as herdsmen, only dabbled in silversmithing and rug-weaving for personal use, experienced a new, vast, and still expanding market for their handicrafts.

Of equal, or perhaps even greater magnitude, are the changes that have come about as a result of the development of the mineral industry. The advent of the mineral recovery industry in Navajo Country produced startling results. Exploration for and recovery of mineral assets, and the subsequent royalties and tax revenues produced, led directly to an apparent improvement in the Navajo standard of living. Dollars were used to produce more and better roads, more and better schools, more and better entitlements, and to manage it all, more, if not necessarily better, government.

The development of the tourist and mineral recovery industries altered the focus of economic activity from the agricultural to the mineral resource and service sectors. As an increasing population of Navajo discovered that they were living on a fixed and ever more crowded land base, alternative, non-ranching employment became more of a necessity. Services, trade, government and mineral recovery provide the bulk of today's paid employment opportunities.

Even so, the majority of Navajo people remain reliant on raising livestock for their livelihood. And, as always, it is done in the traditional manner. Little or no English is spoken. Hogans, corrals, and sweathouses are scattered piecemeal throughout the region, and form the residential base for claims to livestock use. Many, if not most, residences lack running water and/or electricity.

By large measure, today's Navajo people continue to share the same complicated belief system that has been handed down for generations. Lands have long been held for family use, and even though current economic reality has required some members to move away, the extended family concept is maintained and the family members who leave for work frequently return to enjoy the family surroundings. Economic goods are shared and the family works cooperatively to sustain all the members. Many follow tribal customs and practices, and maintain the personal, spiritual, and physical values and beliefs of their ancestors.

Navajo children are "born to the clan of their mother", but they are "born for" the clan of their father. Beliefs, values and correct behavior are learned in the home, as are herding, riding and animal husbandry skills. Young girls have the additional burdens of learning to cook and weave as well as tend to their even younger siblings. Grandparents and grandchildren still share common tenants which hold custom, practice and religion as inexorably tied to relationships with the land. The earth is considered sacred and many ceremonies are conducted to maintain the balance between Mother Earth and her human inhabitants. Actions and events can occur that disrupt one's harmony. A system of ceremonial rituals, chants and symbolic sand painting performed by a trained medicine man has been developed to restore harmony to an individual's life.

If the disruption of harmony is of a more political or simply quarrelsome nature, individuals and families also turn to other groups or individuals to mitigate or mediate a solution. Land Board members, as well as respected Bureau of Indian Affairs (BIA), Tribal, or Chapter personnel are often called upon to informally referee a disagreement between kin, clan or neighbor.

Navajo livestock operators are assigned permits to graze their livestock. These permits indicate a specific area that the permittee is authorized to use Land Boards, made up of elected Navajo live stockmen, have been given the responsibility of determining range unit boundaries and land users. The land board members, who themselves are part of the Navajo culture, have been greatly influenced by tradition. A grazing system has resulted that is made up of a large number of small range units, with 160 acres not being uncommon, each used by several permit holders grazing their own herds of sheep, goats, cows or horses on a year-long basis.

Considering the fact that the Four-Corners area of New Mexico is such a complicated checkerboard pattern of land status, a cooperative agreement for the grazing administration of this area was entered into by the BLM, BIA and the Navajo Nation in 1966. Under the agreement and its subsequent amendments, the grazing administration on 33 Indian communities was transferred from the BLM to the BIA. Two Navajo communities remain under BLM grazing administration. The 33 communities administered by the BIA include 1,118,742 acres, of which 268,951 are public domain, 34,601 are state lands, and 22,666 acres are owned by the Navajo Nation. The balance is either land held in Trust, or otherwise set aside for Navajo use. The BIA issues grazing permits to 2,425 operators on 935 separate range units. An additional 20 Homesteads and 3000 Individual Indian allotments also freckle the landscape. The Homesteads are 640 acres and the allotments average 160 acres in

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size. Grazing is managed by the individual Indian owners with little BIA or Tribal supervision.[62] The Navajo Nation has sole jurisdiction over ranch operations on 1,015,439 Tribally owned acres, 134,233 public domain acres, and 128,350 acres of land owned by New Mexico.[63]

In the arid, beautiful environment of the Four-Corners area of New Mexico, range plants and animals, and the ever-present Navajo herdsmen, continue to be a major part of the panorama. And although they now share space with pump-jacks on the horizon and concessionaires along the road, they remain the primary icons of land use among the red mesas on the high desert. Man or woman, whether astride the saddle or on foot, whether attired in a new Carhartt coat or shrouded in an old blanket, the Navajo, his dog, and his herd remain as one with the land.

The above is my abbreviated effort to describe the Custom and Culture of the Navajo in New Mexico. It is a short synopsis of their history. Although facts and figures on all facets of Navajo life are available, including statistics on birth, employment, income, demographics and death, I have forgone a discussion of them. By design, my treatment was not a scholarly one. It does not analyze events. It does not attempt to delve into the depths of detail available on the subject. Suffice it to say that for every sentence you've read, a chapter could be written. You won't find citations, (with two obvious exceptions), because there aren't any. Statements were made simply from knowledge gained in my numerous years as an employee with the BIA in Crownpoint, NM.

Allan Vesely
1/29/97

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[62] Bureau of Indian Affairs, Navajo Area, Eastern Navajo Agency Statistics

[63] Title, Records and Appraisal Section, Navajo Land Department, Division of Natural Resources, October 24, 1996, memo to Eastern Navajo Land Board members

PUEBLO OF ACOMA
CUSTOM AND CULTURE

Pueblo of Acoma Custom and Culture:

HISTORY:

The Pueblo of Acoma people; and other Pueblos, have lived in this region of the Southern Colorado Plateau from time immemorial. Archeologists now find our ancestry goes back longer than 10,000 years. For Acomas, even as we have resided on top of Acoma Mesa for only 1,000 years we lived in the Acoma Valley, along Cebollita Canyon, and in the Rio San Jose River Valley for much longer than that. Our migration history tells that we came from the north and we identify Chaco Canyon and Mesa Verge as our ancestral places. We are known as Acomas living at Acoma because we were looking for a permanent homeland that was "haakuu" (a place prepared) for our people. When the Spanish came they called our villages "pueblos", and we are now called Acoma Pueblo.

Today, much of our ancient land is private, state, and federal land. We lost 1,500,000 acres to the federal government even as we proved aboriginal title in Pueblo of Acoma vs. United States of America. The Spanish recognized some of our land and today 95,000 acres is known as the Pueblo of Acoma Grant. Much of our remaining landholding we have had to recover from the United States. We have had to purchase thousands of acres ourselves. Our present land base consists of 386,000 acres.

We are part of this land. It is our permanent homeland. Our elders tell us we are already underneath the land and we are part of it. The Thousands of ruins in this region attest to the ancient occupation of our people. We have always been agriculture people, residing together in matrilineal clanship system. We were and remain a peaceful, spiritual people who lived conservatively and gratefully with the land and natural resources. We gave thanks to the Great Creator for the water, animals, clay and stone, and all natural resources as we made use of them for daily sustenance. This remains our way of life.

PRESENT

Our way of life is centered around our ancient village, commonly known as "Sky City." We claim to be the oldest, continuously occupied village in North America. The three foreign governments of Spain, Mexico, and the United States, gave canes of recognition to the Acoma People. These canes which are carried by tribal leaders recognize the sovereign attributes of the tribe. Our modern political government remains traditionally selected by traditional, religious leaders.

We are a closely knit tribal community. We have Spanish and English names yet we also have our own Acoma names. We are collective owners of tribal land. Individual lands for farming and residential purposes are allocated by traditional methods. Our people use their land assignments for homes, farming, and ranching. The Acoma people are thriving economically. The tribe was the first Indian gaming tribe in New Mexico and we now operate Sky City Casino. We are also cattlemen, individually, and as we operate the tribal Bar-15 Ranch and Red Lake Ranch. We rely heavily on tourism and this has proven to be a mainstay of the tribal economy, both for tribal revenues and for community benefit as our people market their arts and crafts.

Language and traditional ways remain strong in the Acoma culture. Our way of life revolves around traditional, religious practices. We continue to hold religious, ceremonial events in private. We pray for all people that we may all be well and live good and peacefully and that we may have rain for our crops and the wildlife. We continue to pray at religious shrines located on private, state, and federal land, such as on Mt. Taylor and El

Malpais National Monument. Yet we are a very, open community. We respect and we have good relationships with the neighboring Navajo, Hispanic, and Anglo communities.

FUTURE BASED ON CUSTOM AND CULTURE

We intend to remain Acoma, living on our permanent Acoma homeland. Our population is increasing on the Acoma Indian Reservation. Even as we diversify our tribal economy into other tourism oriented businesses we encourage tribal people to make use of the land for farming. This is difficult when there is little water. We need help from state and federal resources to respect, develop, and protect our water resources. We expect that local governments, the state, and the federal government understand and respect the sovereignty of the Acoma tribe. We are a sovereign indigenous nation. We have all the rights to govern our ourselves and to establish all laws and policies for ourselves and to freely self-determine our way of life as a nation.

There are state and federally lands being leased by the Acoma tribe. These are aboriginally claimed lands that were taken from us under state and federal laws. Now, in essence we pay to lease our aboriginal land. It is the tribal goal to see the return of these lands to we the rightful owners. We intend to work with state and federal government to make this a justful reality.

Appendix F

COUNTIES DIFFERING VIEW OF THE ANALYSIS

Some cooperating counties have passed ordinances that require that they prepare an Environmental Impact Report for actions proposed in their county. The cooperating counties joined as cooperators to reduce duplication in the EIS effort. During the process it became clear that the BLM and counties did not agree on all wording in the BLM Statewide document. Because differences could not be resolved, BLM offered to include differences in Appendix F, however, the counties did not provide BLM any information to go into this appendix. Rather, Catron and Sierra Counties each delivered a Draft Environmental Impact Report that they asked BLM to make available for public review. One copy of each Draft Environmental Impact Report received from Catron and Sierra Counties is available for review at the BLM New Mexico State Office at 1474 Rodeo Rd, Santa Fe, NM. It will be available for review until the end of the comment period on this Statewide EIS document. Copies of the Environmental Impact Report are also available in the counties that prepared them.

GLOSSARY

GLOSSARY

8100 Projects - range betterment projects funded by monies returned to the BLM based on a specific portion of the grazing fees.

Activity Plan - a site specific plan which precedes actual development or implementation. It is the most detailed level of BLM planning.

Actual Use - the location, number, and kind of livestock that graze on an allotment or portion of an allotment, and how the livestock graze on it.

Allotment Grazing Right Owner - (A Coalition of Counties definition) - owner of the preference on BLM lands.

Allotment - an area of land designated and managed for grazing of livestock.

Aquifer - a water-bearing bed or zone below the earth surface that is capable of producing water as from a well.

Area of Critical Environmental Concern (ACEC) - an area within the public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, scientific, wildlife or scenic values.

Animal Unit Month (AUM) - the amount of forage needed to sustain one cow, five sheep or five goats for a month.

Basal Cover - a measurement of the amount of area plant species encompass on the ground. Basal cover is usually measured as the percentage of ground cover of plants, by species, in relationship to other forms of ground cover such as litter, bare ground, and rocks.

Best Management Practice (BMP) - a practice or combination of practices that are determined after problem assessment and examination of alternatives to be the most effective and practicable (technologically, economically, and institutionally) means of preventing or reducing the amount of pollution from nonpoint sources to a level compatible with predetermined goals.

Biological Assessment - a document prepared, usually in conjunction with an Environmental Impact Statement, that analyzes the specific impacts of a project and alternatives to any species listed as endangered or threatened, or proposed to be listed as such, under the Endangered Species Act, that may occur in the proposal area or be affected by the proposal. The Biological Assessment (BA) is a requirement of the Section 7 (Section 7(a)2 of the Endangered Species Act) Consultation between a Federal Agency and the U.S. Fish and Wildlife Service (FWS). FWS uses the information in a BA to render an opinion as to whether the proposed project will jeopardize the continued existence of any listed species. FWS may suggest or require adjustments to the action to avoid adverse impacts or jeopardizing the existence of a species.

Biotic - refers to living components of an ecosystem, e.g., plants and animals.

Browse - (noun) the tender shoots, twigs, and leaves or trees and shrubs often used as food by cattle, deer, elk, and other grazing animals. (Verb) to consume, or feed on.

Capability - the capacity for an indicated use or development.

Climax Vegetation - the final vegetation community and highest ecological development of a plant community that emerges after a series of successive vegetational stages. The climax community perpetuates itself indefinitely unless disturbed by outside forces. Climax is synonymous with Potential Natural Community in BLM vegetation condition descriptions.

Conservation Recommendations (CR) - discretionary actions suggested by the U.S.Fish and Wildlife Service to minimize or avoid the adverse effects of an action. Such actions are not required, but are highly recommended.

Culture - customary beliefs, social norms and marital traits of a group...of racial, religious or social group integrated pattern of human behavior passed to succeeding generations and that complex whole that includes knowledge, belief, morals, law, customs, opinions, religion, superstition and art.

Custom - a usage or practice of the people, which, by common adoption and acquiescence, and by long and unvarying habit, has become compulsory and has acquired the force of law with respect to the place or subject- matter to which it relates...An habitual or customary practice, more or less widespread, which prevails within a geographic or sociological area.

Desired Plant Community (DPC) - (A Coalition of Counties definition) - the designed vegetative mosaic to meet RMP goals as developed through a statutory process that balances resource conservation with individual, social cultural/historic economic opportunities to promote, sustain and enhance local communities.

Desired Plant Community (DPC) - the plant community which provides the vegetation attributes required for meeting or exceeding RMP vegetation objectives. The DPC must be within an ecological site's capability to produce these attributes through natural succession, management action, or both. A specific description of the vegetation needed to meet the vegetation objectives of a detailed activity plan or implementing action can be described as a desired plant community.

Desired Resource Condition - the condition of the soil and vegetation resource that management actions are focused upon achieving.

Direct Economic Impacts - the sum of economic impacts to an individual sector which is directly impacted.

Diverse - a variety of different species (plant or animal).

Ecological Site - (A Coalition of Counties definition) - classification of an area that would be expected to produce a characteristic potential biotic community that has a predictable plant composition and animal production.

Ecological Site - a distinctive kind of land that differs from other kinds of land in its ability to produce kinds and amounts of vegetation in response to management.

Economic Activity - the dollar flows with an economy.

Economic Impacts - change in dollar flows (economic activity), personal income, and jobs, (FTEs) associated with an external change to the economy.

Ecosystem - a complex self-sustaining natural system which includes living and nonliving components of the environment and the circulation of matter and energy between organisms and their environment.

Endemism - describes the distribution of a species where it is limited to very small or unique areas or habitats.

Environmental Assessment (EA) - a concise public document prepared to provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding no significant impact. It includes a brief discussion of the need for the proposal, alternatives considered, environmental impact of the proposed action and alternatives, and a list of agencies and individuals consulted.

Environmental Impact Statement (EIS) - a formal public document prepared to analyze the potential impacts (both beneficial and adverse) on the environment of a proposed project or action and release for comment and review. An EIS must meet the requirements of NEPA, CEQ guidelines, and directives of the agency responsible for the proposed project or action.

Evapotranspiration - that part of precipitation returned to the air through direct evaporation or by transpiration of vegetation.

Field Office - the smallest administrative subdivision of the BLM, (formerly called Resource Areas RAs).

Field Office Manager - the individual in charge of the field office having full responsibility for public land resource management and delivery of BLM products, services and customer services to land users and the public for a designated portion of the geographical area under the jurisdiction of the BLM State Office.

Folial Cover - the percentage of ground covered by a downward vertical projection of the aerial portion of plant foliage, excluding small openings in the canopy.

Full Time Equivalents (FTE) - equal to one full time job.

Functioning At Risk - uplands or riparian-wetland areas that are properly functioning, but soil, water, or vegetation attributes makes them susceptible to degradation and lessens their ability to sustain natural biotic communities. Uplands are particularly at risk if their soils are susceptible to degradation. Human activities, past or present, may increase the risk.

Guidelines - (A Coalition of Counties definition) - guidelines for grazing management are methods and practices to ensure that standards can be met or that progress can be made toward meeting that end.

Guidelines - guidelines for grazing management are methods and practices to ensure that standards can be met or that progress can be made toward meeting that end.

Hydromodification - any man-made alteration of the hydrologic function of the stream channel, including streambank destabilization and reduction of riparian vegetation.

Ice Cream Species - an exceptionally palatable species sought and grazed first by livestock and game animals. Such species are usually overutilized under proper grazing.

Incidental Take - an official permitting of taking (defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting a listed species). An incidental take statement also includes specific terms and conditions to implementation of he action.

Interested Public - an individual, group or organization that has submitted a written request to the authorized officer to be provided an opportunity to be involved in the decisionmaking process for the management of livestock grazing on specific grazing allotments or has submitted written comments to the authorized officer regarding the management of livestock on a specific allotment.

Lentic - standing water riparian habitats, such as lakes, ponds, or playas.

Livestock Grazing Plan - an activity plan developed consistent with the definition of 43 USC 1702(k), that focuses on and contains the necessary instructions for management of livestock grazing on specific public lands to meet resource condition, sustained yield, multiple use, economic, and other objectives.

Lotic - moving water riparian habitats such as rivers, creeks, or springs.

Mitigation - action taken to alleviate or lessen the adverse effects of a management practice.

Monitoring - the orderly process of collection, analysis, and interpretation of resource data to evaluate progress toward meeting management objectives.

Multiple Use - a combination of balanced and diverse resource uses that considers long-term needs or renewable and nonrenewable resources, including recreation, rangeland, timber, minerals, watershed, and wildlife, along with scenic, scientific, and cultural values.

National Scenic Trail - a trail designated under The National Trail System Act. It must be an extensive trail, located for its outdoor recreation potential, and for the conservation and enjoyment of nationally significant scenic, historic, natural, or cultural qualities in its vicinity.

Nonfunctioning Condition - riparian-wetland areas are considered to be in nonfunctioning condition when they do not provide adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows thus are not reducing erosion, improving water quality, or other normal characteristics of riparian areas. The absence of certain physical attributes such as flood plain where one should be are indicators of nonfunctioning condition. Uplands are considered to be in nonfunctioning condition when existing vegetation and ground cover do not maintain soils capable of sustaining natural biotic communities. See Properly Functioning Condition and Functioning At Risk.

Nonpoint Sources - the Environmental Protection Agency (EPA), in Federal Register 41 (119), Friday, June 18, 1976, gave three general criteria for nonpoint sources. They are: 1. The pollutants discharged are induced by natural processes, including precipitation, seepage, percolation, and runoff; 2. The pollutants discharged are not traceable to any discrete of identifiable facility; and 3. The pollutants discharged are better controlled through the application of best management practices, including process and planning techniques.

Notice of Intent (NOI) - a notice published in the Federal Register to announce the beginning of the planning/NEPA process and to seek public involvement.

Notice of Availability (NOA) - a notice in the Federal Register to announce the availability of a document for public review.

Off-Highway Vehicle (OHV) - any motorized vehicle capable of or designed for travel on or immediately over natural terrain. OHV use includes driving off a designated road for purposes including, but not limited to recreation, ranching, mineral operations, hunting, fuelwood gathering, etc.

Opinion - refers to the opinion of the U.S. Fish and Wildlife Service in judging whether the action analyzed will jeopardize the continued existence of a species.

Optimum Infiltration - (A Coalition of Counties definition) - the capture of precipitation based on soil type and geologic conditions measured by the delivery of water to ground and surface sources.

Personal Income - includes wages, salaries, and proprietary income.

Plan Amendment - a document that changes a part of the existing plan or adds to it, allows new proposals to be considered and incorporated, if warranted, into the plan. It helps to keep the plan useful and extends it life. Formal notice and public involvement is required.

Plan Maintenance - keeping the data base and planning current, it makes no changes in planing decisions, however there is opportunity to refine decisions. There is no formal notice or public involvement required.

Potential - existing in possibility, capable of development into actuality.

Production Goals - (A Coalition of Counties definition) - the level of goods and services, both commodity and non-commodity, expected to be achieved from the management of a given area of land. These are designed to meet statutory requirements and public values as developed at the local level.

Productive - having the quality or power of producing.

Proper Functioning Condition - riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high waterflows, thereby reducing erosion and improving water quality; filter sediment, capture bedload, and aid floodplain development; improve floodwater retention and groundwater recharge; develop root masses that stabilize steambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and water depth, duration and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity. The functioning condition of riparian-wetland areas is influenced by geomorphic features, soil, water and vegetation.

Public Land Health - the degree to which the integrity of the soil and the ecological processes of public lands ecosystems are sustained. Public land health exists when ecological processes are functioning properly to maintain the structure, organization and activity of the system over time.

Public Lands - any land or interest in land (outside of Alaska) owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management.

Rangelands - land on which the native vegetation (climax or natural potential) is predominantly grasses, grass-like plants, forbs of shrubs suitable for grazing or browse use. Includes lands revegetated naturally or artificially to provide a forage cover that is managed like native vegetation. Rangelands may consist of natural grassland, savannas, shrublands, most deserts, alpine communities, coastal marches and wet meadows.

Range Site - a distinctive site capable of supporting a native plant community typified by an association of species that differs from that of other range sites in the kind or proportion of species or in total production.

Reasonable and Prudent Alternatives - are non-discretionary companions to a jeopardy determination issued by the U.S. Fish and Wildlife Service.

Reasonable and Prudent Measures (RPM) - are non-discretionary (required implementation) measures attached to an Incidental Take statement to guide and minimize Incidental Take. RPMs are binding on all permits and permittees engaging in activities covered by

Incidental Take. RPMs may also be applied without an Incidental Take statement.

Resilient - capable of withstanding shock without permanent deformation or damage and return freely to it previous position, shape, or condition.

Resource Management Plan (RMP) - a written land use plan that outlines BLM's decisions and strategies for management of the resources in a particular area (usually a resource area). The RMP has been used by the BLM since 1980.

Resource Advisory Council (RAC) - a group of citizens representing a diversity of interests concerned with management of public lands. In New Mexico, a statewide body with members advising the BLM State Director about public land issues and solutions.

Riparian - an area of land directly influenced by permanent water. It has visible vegetation of physical characteristics reliant upon continuous presence of water. Lakeshores and streambanks are typical riparian areas. Sites such as ephemeral streams or washes that exhibit the presence of vegetation which is dependent upon free water in the soil would be considered riparian areas.

Scoping - As defined in the CEQ Regulations (40CFR 1500-1508), an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. Scoping may involve public meetings, field interviews with representatives of agencies and interest groups, discussions with resource specialist and managers, written comments in response to new releases, direct mailings and articles about the proposed action, and scoping meetings.

Section 3 - a permit authorizing grazing use on public lands inside a grazing district boundary. It is a reference to that section of the Taylor Grazing Act pertaining to lands within the district boundary.

Section 15 - a lease authorizing grazing use on public lands outside the grazing district boundary. It is a reference to that section of the Taylor Grazing Act pertaining to lands outside the district boundary.

Seral - Refers to the ecological stage of a plant community with respect to ecological succession. Seral stages used by BLM in describing ecological succession are: early seral, mid-seral, late seral, and climax or potential natural community.

Silviculture - the portion of forest management related to establishment, development, reproduction and care of trees.

Site Potential - (A Coalition of Counties definition) - the ability of a particular site to produce various vegetation compositions and production levels as limited by edaphic, climatic, geologic, genetic and topographic factors.

Soil Taxonomy - a soil classification system based on observable or measurable properties primarily those which can be observed or measured in the field.

Standard - (A Coalition of Counties definition) an acknowledged measure of comparison regarding a resource upon which a judgement is based. Measurements include adequate and reproductive sampling methods, sampling size and sampling frequency and duration to obtain discrete values for each ecological site within a management area.

Standard - an acknowledged measurement of comparison of public land and its resources upon which a decision is based.

Sustainable - (A Coalition of Counties definition) - capable of maintaining RMP goals in perpetuity. Sustainable can be equated with proper ecological functioning.

Sustainable - capable of being maintained in perpetuity, such that the portion of the renewable resource (vegetation or animals) removed from the public lands by one harvest is replaced by growth or reproduction before another harvest occurs.

Sustained Yield - the continuation of a healthy desired plant community.

Taxonomic - refers to the system of classification used to establish the scientific names of organisms, or names of soils.

Threshold - a point, below which there is no apparent or measurable adverse effects.

Trend - the direction of change over time, either toward or away from desired management objectives.

Upland - the portion of a watershed which provides drainage to channels and streams, and which is normally dry on the surface.

Watershed - the total area above a given point on a waterway that contributes runoff water to the streamflow at that point.

Wetland - areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support and which, under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions.

Wilderness Study Area (WSA) - a roadless area or island that has been inventoried and found to have characteristics described in Sections 603 of FLPMA and Section 2(c) of The Wilderness Act of 1964. These lands are currently managed under the "Interim Management Policy and Guidelines for Lands Under Wilderness Review".

Wilderness Area - an area formally designated by Congress as part of the National Wilderness Preservation System.

Value of Production (VOP) - the total amount of output produced by an individual sector.

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